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END OF SECTION

SECTION 01 01 00
REAL ESTATE

PART 1 GENERAL

1.01 DESCRIPTION

A. Access and Staging Areas: Access agreements for the staging areas will be obtained by the Contractor, with assistance from the Owner and other Lower River and Inner Harbor Sheboygan River Area of Concern Project Team members. Silt curtains and barges may need to be moored to shore during dredging activities. Permission from the property owner will be required for this work and will be obtained by the Contractor, with assistance from the Owner and other Lower River and Inner Harbor Sheboygan River Area of Concern Project Team members.

B. Additional Real Estate Rights: Additional real estate rights desired by the Contractor shall be obtained by the Contractor at its own expense. Such agreements shall clearly relieve the Engineer and Owner of responsibility resulting from the Contractor's use of the grounds.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 02 00
PROJECT SUMMARY

PART 1 GENERAL

1.01 DEFINITIONS

A. Owner – USEPA is the Owner of the Work.

B. Contractor – The successful bidder for the Sheboygan River sediment remediation work contract will become the Contractor.

C. Engineer - CH2M HILL is contracted by USEPA to provide services during construction and therefore is the Engineer.

D. Project Site – Sheboygan River located in Sheboygan, Wisconsin.

E. Debris: logs, lumber, anchors, chains, rope, cinderblocks, slag, scrape material, and other man-made or naturally deposited material located within the dredging area that is not sediment.

F. Dredging Project Area: A 7,300-foot-long stretch of the Sheboygan River starting 1,200 feet upstream of the 14th Street Bridge on the upstream end to the west side of the 8th Street Bridge on the downstream end.

G. Offloading Platform: An extension into the Sheboygan River at the WINSA site and an extension into the Sheboygan River at the Campmarina site.

H. Staging Area: Area approved by Owner and City of Sheboygan for equipment and personnel to use in support of the project.

I. Sediment Processing Pad: An impervious surface of either concrete or asphalt surrounded by berms to contain stormwater used in the processing of sediment prior to shipment offsite for disposal. In areas where TSCA sediment will be processed, the Sediment Processing Pad will be constructed with a geomembrane liner underneath the impervious surface.

J. Oversized Debris: Debris that prevents the environmental clamshell bucket from closing completely during dredging.

K. Project Area

1. Dredging Project Area.
2. Campmarina offloading and support area.

3. WINSA offloading and support area.
4. Kiwanis Park area.

L. USEPA – United States Environmental Protection Agency.

M. WDNR – Wisconsin Department of Natural Resources.

N. WINSA – Wisconsin Naval Ship Association.

O. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

P. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

1.02 PROJECT DESCRIPTION

A. The Sheboygan River discharges into Lake Michigan via the Federal navigation harbor at Sheboygan, Wisconsin. The Dredging Project Area is a portion of the Sheboygan River the Lower River reach from 0.25 mile upstream of the 14th Street Bridge to the end of the Lower River reach at the Pennsylvania Avenue Bridge, and the Inner Harbor reach from the Pennsylvania Avenue Bridge to the 8th Street Bridge as shown on the Drawings.

B. Sediment contaminated with polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs) will be dredged and transported to either the Campmarina MGP site, the Kiwanis Park site, or the WINSA Site for offloading and dewatering.

C. The estimated in-place volume of sediment to be removed from the Dredging Project Area using the proposed dredge neat line is 172,000 cubic yards (CY) and the estimated maximum volume (including 6-inches of allowable over-dredge beneath the dredge neat line) is approximately 192,000 CY.

D. This work is being performed as a remedial action under the Great Lakes Legacy Act for removing contaminated sediment within the Lower River and Inner Harbor of the Sheboygan River Area of Concern (AOC).

1.03 EXISTING PROJECT AREA CONDITIONS

A. Campmarina Site:

1. Items associated with restoration of Campmarina site from a previous project that Contractor is responsible for are listed in Section 31 01 00, Site Management and Construction Sequencing.
2. Take all precautions required to maintain the integrity and structural stability of the Waterloo barrier. In addition, precautions shall be taken to maintain integrity of the existing railing, sidewalks, and other City of Sheboygan improvements in the Work Area.
3. Limit ground pressure in the area bounded by the existing, upland, subsurface Waterloo barrier and containing the geosynthetic cover to 4 pounds per square inch (psi).
4. Repair or replace railing, retaining walls, other park features, geosynthetic cover, and Waterloo Barrier following incurred damage.

B. A shipwreck is located within the Dredging Project Area but will not need to be removed prior to dredging operations adjacent to it as shown on the Drawings.

C. Bridges cross over the project area at 8th Street (downstream limit) and 14th Street (upstream limit). The Pennsylvania Avenue Bridge and Union Pacific Railway (UPR) Railroad Bridge are located within the Project Area as shown on the Drawings.

D. Seawalls are located within the Dredging Project Area as shown on the Drawings. Stability of the known seawalls in the Dredging Project Area has not been investigated as the Work should not impact the shoreline.

E. Above and below ground utilities are located within the Dredging Project Area. The approximate location of known, existing utilities are shown on the Drawings. The exact location of known utilities and existence of unidentified utilities shall be investigated by the Contractor prior to beginning work.

F. Docks and dock piers are located within the Dredging Project Area. Property owners are to be notified at a minimum of three weeks prior to dredging operations in their area to allow them to remove their docks prior to dredging operations. Property owners are responsible for the stability of dock piers after dredging.

1.04 ENVIRONMENTAL CONTAMINANTS

A. PCBs and PAHs have been identified as the primary contaminants of concern within the Dredging Project Area.

B. Laboratory analysis of sediment collected during a 2010 sampling event detected PCB concentrations ranging from non-detect to 133 mg/kg.

C. Laboratory analysis of sediment collected during a 2010 sampling event detected PAH concentrations ranging from 0.016 mg/kg to 7,900 mg/kg.

D. Sediment sampling results are summarized in the Final Remediation Investigation Report, Lower River and Inner Harbor of the Sheboygan River (CH2M HILL, 2011).

1.05 REFERENCES

A. Baird & Associates (2007). Sediment Transport Modeling Sheboygan River. Report submitted to the US Army Corps of Engineers Detroit District. 169 pp.

B. CH2M HILL. 2011. Final Remediation Investigation Report, Lower River and Inner Harbor of the Sheboygan River, Sheboygan, Wisconsin. June.

C. CH2M HILL. 2011a. Feasibility Study, Lower River and Inner Harbor of the Sheboygan River, Sheboygan, Wisconsin. June.

D. Pollution Risk Services (PRS). 2009. Lower River Pre-Design Investigation Report, Sheboygan River and Harbor Superfund Site. November.

E. Pollution Risk Services (PRS). 2010. 100% Design, Sheboygan River and Harbor Superfund Site, Lower River. March.

F. Natural Resources Technology, Inc. (NRT). 2009. River Operable Unit Remedial Investigation Report – Revision 1, Former Manufactured Gas Plant, Sheboygan-Campmarina. July 21.

G. Natural Resources Technology, Inc. (NRT). 2011. Focused NAPL and Sediment Removal, Campmarina MGP River OU. April 6.

H. U.S. Army Corps of Engineers (USACE). 2008. Technical Guidelines for Environmental Dredging of Contaminated Sediments. ERDC/EL TR-08-29. September.

I. U.S. Environmental Protection Agency (USEPA). 2010. Explanation of Significant Differences, Sheboygan River and Harbor Superfund Site. December.

J. U.S. Environmental Protection Agency (USEPA). 2011. Sediment cleanup goals recommendations for the Sheboygan Great Lakes Legacy Act Project. August 8, 2011.

K. U.S. Geological Survey (USGS). 2011. Web site: http://www.usgs.gov/. Accessed April 2011.

L. Walker, J. F. and W. R. Krug. 2003. Flood-Frequency Characteristics of Wisconsin Streams. USGS. Water-Resource Investigations Report 03-4250.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 05 01
SAFETY REQUIREMENTS

PART 1 GENERAL

1.01 DEFINITIONS

A. SSO: Contractor’s Site Safety Officer, whose sole responsibility will be to supervise and enforce the Contractor’s safety program.

1.02 SUBMITTALS

A. Informational: Name, address, and phone number of a responsible individual or individuals who will be available on a 24-hour basis to handle emergency problems in connection with this project.

B. Action: Contractor’s HASP in accordance with the requirements of the Contract.

1.03 WORK INCLUDED

A. Work completed by the Contractor shall be accomplished in accordance with the Contractor's HASP as approved by Owner.

PART 2 PRODUCTS

2.01 GENERAL

A. Contractor’s employees, while on the project site, shall meet the requirements of 29 CFR 1910.120 (HAZWOPER).

B. Contractor’s employees, while on project site, shall wear the protective clothing and use equipment specified in the Contractor's HASP. These requirements shall apply continuously.

C. Because operations onsite have the potential for encountering hazardous substances, Level D shall be the minimum protection allowed. Although it is not expected, to adequately protect personnel in areas of higher potential hazardous substance exposure, Level C protection equipment may be required. Contractor's Site Safety Officer (SSO) will be responsible for informing Contractor of the need to upgrade to Level C. Equipment required to be either worn or carried under these levels of protection must be listed in Contractor’s HASP.

PART 3 EXECUTION

3.01 GENERAL

A. Contractor shall comply with its own HASP for the health and safety of persons and property in the vicinity of the Work area. Contractor's HASP shall be submitted to the Owner for review and acceptance. Work shall be performed in accordance with the Site Health and Safety Plan. Noncompliance by the Contractor or its personnel with its HASP is grounds for a stop work order or dismissal of the Contractor with payment only for Work completed.

B. Engineer will enforce its plan for its personnel only.

C. Contractor shall develop and maintain, for the duration of this Contract, a comprehensive Health and Safety Program that is in compliance with Federal, State and local regulations. The Contractor shall additionally designate a SSO whose sole responsibility will be to supervise and enforce the Contractor's safety program. The acceptable qualifications for the SSO will be as follows:

1. A degree in Occupational Safety and Health from an ABET-accredited college;
2. Either a Certified Safety Professional (CSP) or Certified Industrial Hygienist (CIH) designation;
3. A Safety Trained Supervisor (STS) accreditation from the Board of Certified Safety Professionals plus 5 years of relevant work experience or;
4. A resume that has been approved by the Owner.

D. Additionally, the Contractor, as part of the Health and Safety program, shall:

1. Maintain tools and equipment to manufacturer specification.
2. Provide Personal Protective Equipment (PPE) adequate to perform anticipated tasks
3. Provide the proper equipment and trained personnel to administering First- AID/CPR
4. Furnish Fire Extinguishing equipment and personnel trained in its use; as well as, provide for other reasonable measures relating to Emergency Preparedness.

E. The duty of the Engineer to conduct review of the Contractor's performance is not intended to include a review or approval of the adequacy of the Contractor's SSO, the Health and Safety Program, or safety measures taken in, on, or near the site.

F. The Contractor shall be familiar with and comply with applicable safety codes, ordinances, and statutes, and bear sole responsibility for the penalties imposed for noncompliance. This includes, but is not limited to, waterway hazards, as well as those associated with barges, dredges, pipelines and boat traffic.

G. The Contractor shall submit the name, address, and phone number of a responsible individual or individuals who will be available on a 24-hour basis to handle emergency problems in connection with this project.

H. The Contractor shall do work necessary to protect the general public from hazards including, but not limited to, open boreholes, water sumps, and trenches or excavation. Barricades, lanterns, and proper signs shall be furnished in sufficient amount to safeguard the public and the Work. Such barriers shall have adequate warning lights as necessary, or required, for safety.

I. The Contractor shall do work necessary to protect the general public from on-water hazards created by the dredging activities. This includes, but is not limited to pipeline identification and marker buoys, protection of commercial and recreational watercraft and maintenance of boat traffic.

J. Owner, Engineer, and authorized government agents, and their representatives, shall be provided safe access to the Work wherever it is in progress, and the Contractor shall provide facilities for such access and for inspection.

END OF SECTION

SECTION 01 29 00
PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Schedule of Values: Submit on Contractor's standard form.
2. Schedule of Estimated Progress Payments:
   a. Submit with initially acceptable Schedule of Values.
   b. Submit adjustments thereto with Application for Payment.
3. Application for Payment.
4. Final Application for Payment.

1.02 SCHEDULE OF VALUES

A. Prepare a separate Schedule of Values for each schedule of the Work under the Agreement.

B. Upon request of Owner, provide documentation to support the accuracy of the Schedule of Values.

C. Unit Price Work: Reflect unit price quantity and price breakdown from conformed Bid Form.

D. Lump Sum Work:

1. Reflect Schedule of Values format included in Conformed Compensation Schedule, Specified Allowances and Alternates, as applicable.
2. List bonds and insurance premiums, mobilization, demobilization, preliminary and detailed progress schedule preparation, equipment testing, facility startup, and contract closeout separately.
3. Break down by Division 2 through 49 with appropriate subdivision of each Specification for each Project facility.

E. An unbalanced or front-end loaded schedule will not be acceptable.

F. Summation of the complete Schedule of Values representing all the Work shall equal the Contract Price.

G. Submit at least 14 days prior to submitting first payment.

1.03 SCHEDULE OF ESTIMATED PROGRESS PAYMENTS

A. Show estimated payment requests throughout Contract Times aggregating initial Contract Price.

B. Base estimated progress payments on initially acceptable progress schedule. Adjust to reflect subsequent adjustments in progress schedule and Contract Price as reflected by modifications to the Contract Documents.

1.04 APPLICATION FOR PAYMENT

A. Transmittal Summary Form: Attach one Summary Form provided in Section 01 33 00, Submittal Procedures, with each detailed Application for Payment for each schedule and include Request for Payment of Materials and Equipment on Hand as applicable. Execute certification by authorized officer of Contractor. Submit to address provided in Contract Agreement.

B. Use detailed Application for Payment Form provided by Owner (Exhibit 1).

C. Provide separate form for each schedule as applicable.

D. Include accepted Schedule of Values for each schedule or portion of lump sum Work and the unit price breakdown for the Work to be paid on a unit priced basis.

E. Include separate line item for each Change Order and Work Change Directive executed prior to date of submission. Provide further breakdown of such as requested by Owner.

F. Preparation:

1. Round values to nearest dollar.
2. List each Change Order and Written Amendment executed prior to date of submission as separate line item. Totals to equal those shown on the Transmittal Summary Form for each schedule, as applicable.
3. Submit Application for Payment, including a Transmittal Summary Form and detailed Application for Payment Form(s) for each schedule as applicable, a listing of materials on hand for each schedule as applicable, and such supporting data as may be requested by Owner.

1.05 MEASUREMENT—GENERAL

A. Weighing, measuring, and metering devices used to measure quantity of materials for Work shall be suitable for purpose intended and conform to tolerances and specifications as specified in National Institute of Standards and Technology, Handbook 44.

B. Whenever pay quantities of material are determined by weight, material shall be weighed on scales and certified accurate by the state agency responsible. Weight or load slip shall be obtained from weigher and delivered to Owner's representative at point of delivery of material.

C. If material is shipped by rail, car weights will be accepted provided that actual weight of material only will be paid for and not minimum car weight used for assessing freight tariff, and provided further that car weights will not be acceptable for material to be passed through mixing plants.

D. Vehicles used to haul material being paid for by weight shall be weighed empty daily and at such additional times as required by Engineer. Each vehicle shall bear a plainly legible identification mark.

E. Materials that are specified for measurement by the cubic yard measured in the vehicle shall be hauled in vehicles of such type and size that actual contents may be readily and accurately determined. Unless all vehicles are of uniform capacity, each vehicle must bear a plainly legible identification mark indicating its water level capacity. Vehicles shall be loaded to at least their water level capacity. Loads hauled in vehicles not meeting above requirements or loads of a quantity less than the capacity of the vehicle, measured after being leveled off as above provided, will be subject to rejection, and no compensation will be allowed for such material.

F. Where measurement of quantities depends on elevation of existing ground, elevations obtained during construction will be compared with those shown on Drawings. Variations of 1 foot or less will be ignored, and profiles shown on Drawings will be used for determining quantities.

G. Units of measure shown on Bid Form shall be as follows, unless specified otherwise.

Item	Method of Measurement
CY	Cubic Yard—In situ measurement based upon bathymetric surveys as specified
EA	Each—Field Count by Engineer

Item	Method of Measurement
HR	Hour
DAY	24-hour Day
MO	Calendar Month
SF	Square Foot
TON	Ton—Weight Measure by Scale (2,000 pounds)

1.06 PAYMENT

A. General:

1. Progress payments will be made monthly.
2. The date for Subcontractor's submission of monthly Application for Payment shall be established at the Preconstruction Conference.

B. Payment for all Lump Sum Work covers all Work specified or shown within the limits or specification sections as shown in Table 1-Lump Sum Price Items, attached as a supplement to this Section.

1.07 NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

A. Payment will not be made for following:

1. Loading, hauling, and disposing of rejected material.
2. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents or disposal facility requirements.
4. Material not unloaded from transporting vehicle.
5. Defective Work not accepted by Owner.
6. Material remaining on hand after completion of Work.

1.08 PARTIAL PAYMENT FOR STORED MATERIALS AND EQUIPMENT

A. Partial Payment: No partial payments will be made for materials and equipment delivered or stored unless Shop Drawings and preliminary operation and maintenance data is acceptable to Engineer.

B. Final Payment: Will be made only for products incorporated in Work; remaining products, for which partial payments have been made, shall revert to Contractor unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

1.09 SUPPLEMENTS

A. The supplements listed below, following "End of Section," are part of this Specification.

1. Table 1 – Lump Sum Items.
2. Table 2 – Unit Price Items.
3. Exhibit 1 – Payment Application Certificate.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

TABLE 1

Lump Sum Items

Item No.	Item	Measurement Parameters
Base Items		
A1	Insurance Premiums	As required in General Terms and Conditions.
A2	Performance and Payment Bonds	As required in General Terms and Conditions.
A3	Premobilization Submittals	This line item includes labor and materials necessary to prepare, assemble, and submit plans, schedules, technical submittals, and other documents listed in the Contract documents.
A4	Mobilization	This line item includes labor, equipment, and materials necessary to transport personnel and equipment to the Project Area, prepare equipment for use at the site, set up temporary facilities and utilities, and prepare and provide submittals required prior to start of work. The lump sum price for Mobilization shall not exceed 7.5 percent of the total bid price.
A5	Site Preparation - WINSA	This line item includes providing labor, materials and equipment necessary to construct access roads, laydown/storage areas, the water treatment system facility, pugmill (hopper) system, and other infrastructure necessary to complete the Work at the WINSA site. This line item also includes providing labor, materials and equipment necessary to provide traffic control, dust control, road sweeping, equipment storage, and maintain infrastructure and temporary facilities at the WINSA site.

TABLE 1

Lump Sum Items

Item No.	Item	Measurement Parameters
A6	Site Preparation - Campmarina	This line item includes providing labor, materials and equipment necessary to construct access roads, laydown/storage areas, the water treatment system facility, pugmill (hopper) system, and other infrastructure necessary to complete the Work at the Campmarina site. This line item also includes providing labor, materials and equipment necessary to provide traffic control, dust control, road sweeping, equipment storage, and maintain infrastructure and temporary facilities at the Campmarina site.
A7	Sediment Processing Area and Offloading Platform Construction - WINSA	This line item includes providing labor, materials and equipment necessary to design and construct the sediment processing area, offloading platform, drip protection system, anchors, barge docking facility and other infrastructure necessary to complete the Work at the WINSA site.
A8	Sediment Processing Area and Offloading Platform Construction - Campmarina	This line item includes providing labor, materials and equipment necessary to design and construct the sediment processing area, offloading platform, drip protection system, anchors, barge docking facility and other infrastructure necessary to complete the Work at the Campmarina site.
A13	Surveys – Independent Party	This line item includes providing labor, materials and equipment necessary to perform the utility survey, debris survey, interim bathymetric surveys and provide independent pre-dredging bathymetric survey and post-dredging bathymetric survey during dredging activities to verify the target elevations as specified in the Contract Documents. Also includes preparation of record documents in both hard copy and electronic deliverable format.
A21	Water Treatment	This line item includes mobilization, demobilization, labor, equipment, materials, and consumables to operate the temporary water treatment systems at the Campmarina and WINSA sites to treat water generated during from sources during the Work.

TABLE 1

Lump Sum Items

Item No.	Item	Measurement Parameters
A22	Site Restoration - WINSA	This line item includes labor, equipment, and materials necessary to restore areas on the WINSA site as necessary, impacted by the Work. This includes removal of constructed infrastructure at the conclusion of the Work.
A23	Site Restoration - Campmarina	This line item includes labor, equipment, and materials necessary to restore areas on the Campmarina site as necessary, impacted by the Work. This includes removal of constructed infrastructure at the conclusion of the Work and restoration of City infrastructure that was removed by others.
A24	Demobilization	This line item includes labor, equipment, and materials necessary to prepare and remove equipment from the Campmarina and WINSA sites and Kiwanis Park (if needed) and any remaining materials from both the facilities.
A25	Contract Closeout / Submittals	This line item includes preparation and revision of record drawings and other closeout submittals required by the Contract Documents.
Optional Item Rate Schedule		
B5	Mobilization of Sand Cover Equipment	This line item includes labor, equipment, and materials necessary to transport personnel and sand cover equipment to the Project Area, prepare equipment for use at the site, set up temporary facilities and utilities, and prepare and provide submittals required prior to start of work.

TABLE 2

Unit Price Items

Item No.	Item	Measurement Parameters
Base Items		
A9	Environmental Monitoring and Control	This line item includes providing labor, materials and equipment necessary to install, operate, and maintain environmental monitoring and control equipment as described in the Contract Documents. The cost report preparation is also included in this line item.
A10	Air Curtain Install / Remove	This line item includes providing labor, materials and equipment necessary to design, install, and remove an air curtain system at the 8th Street Bridge location.
A11	Air Curtain Operate / Maintain	This line item includes providing labor, materials and equipment necessary to operate and maintain an air curtain system at the 8th Street Bridge location.
A12	Confirmation Sediment Sampling	This line item includes providing labor, materials and equipment necessary to collect and process sediment cores for confirmation sampling.
A14	Mechanical Dredging of Non-TSCA Sediment – Upstream of 14th Street Bridge (Area 1)	This line item includes providing labor, materials and equipment necessary to perform mechanical dredging of Non-TSCA sediment, pump free water from the dredged non-TSCA sediment in the scow barge, mix a suitable drying reagent to stabilize the dredged sediment in the pug mill system, transfer sediment to the sediment stabilization area and load stabilized dredged material into trucks. Includes debris removal, transfer the debris to the staging area, decontamination of the debris. Also includes performing dredging in accordance with BMPs to meet specified resuspension performance standards. Payment is based on in situ volume of dredge material as measured by pre-dredging and post-dredging surveys. Cost for installing, monitoring, maintaining, and removal of turbidity controls around the perimeter of Dredge Areas as described in the Contract Documents shall be included.
A15	Mechanical Dredging of Non-TSCA Sediment – Between 14th Street Bridge and Pennsylvania Avenue Bridge (Area 2)	This line item includes providing labor, materials and equipment necessary to perform mechanical dredging of Non-TSCA sediment, pump free water from the dredged non-TSCA sediment in the scow barge, mix a suitable drying reagent to stabilize the dredged sediment in the pug mill system, transfer sediment to the sediment stabilization area and load stabilized dredged material into trucks. Includes debris removal, transfer the debris to the staging area, decontamination of the debris. Also includes performing dredging in

TABLE 2

Unit Price Items

Item No.	Item	Measurement Parameters
		accordance with BMPs to meet specified resuspension performance standards. Payment is based on in situ volume of dredge material as measured by pre-dredging and post-dredging surveys. Cost for installing, monitoring, maintaining, and removal of turbidity controls around the perimeter of Dredge Areas as described in the Contract Documents shall be included.
A16	Mechanical Dredging of Non-TSCA Sediment - Pennsylvania Avenue Bridge to 8th Street Bridge (Area 3)	This line item includes providing labor, materials and equipment necessary to perform mechanical dredging of Non-TSCA sediment, pump free water from the dredged non-TSCA sediment in the scow barge, mix a suitable drying reagent to stabilize the dredged sediment in the pug mill system, transfer sediment to the sediment stabilization area and load stabilized dredged material into trucks. Includes debris removal, transfer the debris to the staging area, decontamination of the debris. Also includes performing dredging in accordance with BMPs to meet specified resuspension performance standards. Payment is based on in situ volume of dredge material as measured by pre-dredging and post-dredging surveys. Cost for installing, monitoring, maintaining, and removal of turbidity controls around the perimeter of Dredge Areas as described in the Contract Documents shall be included.
A17	Mechanical Dredging of TSCA Sediment	This line item includes providing labor, materials and equipment necessary to perform mechanical dredging of TSCA sediment, pump free water from the dredged TSCA sediment in the scow barge, mix a suitable drying reagent to stabilize the dredged sediment in the pug mill system, transfer sediment to the sediment stabilization area and load stabilized dredged material into trucks. Includes debris removal, transfer the debris to the staging area, decontamination of the debris. Also includes performing dredging in accordance with BMPs to meet specified resuspension performance standards. Payment is based on in situ volume of dredge material as measured by pre-dredging and post-dredging surveys. Cost for installing, monitoring, maintaining, and removal of turbidity controls around the perimeter of Dredge Areas as described in the Contract Documents shall be included.

TABLE 2

Unit Price Items

Item No.	Item	Measurement Parameters
A18	Non - TSCA Sediment Transportation and Disposal	This line item includes labor, equipment, and materials necessary to decontaminate the exterior of trucks, and transport and dispose of Non-TSCA Dredged Materials in an appropriate RCRA Subtitle D landfill. Payment is based upon weight tickets obtained from the landfill.
A19	TSCA Sediment Transportation and Disposal	This line item includes labor, equipment, and materials necessary to decontaminate the exterior of trucks, and transport and dispose of TSCA Dredged Materials in a USEPA Region 5 TSCA approved landfill to accept TSCA materials. Payment is based upon weight tickets obtained from the landfill.
A20	Debris RCRA Subtitle D Disposal	This line item includes labor, equipment, and materials necessary to dispose of debris removed from the Project Area and load it into trucks, decontaminate the exterior of the trucks, and transport and dispose of debris at a RCRA Subtitle D landfill. Payment is based upon weight tickets obtained from the landfill.
Optional Item Rate Schedule		
B1	Redredge Beyond Limits at Owner's Direction Non-TSCA upstream of 14th Street Bridge (Area 1)	At the Owner's direction, this line item includes providing labor, materials and equipment necessary to perform mechanical dredging of Non-TSCA sediment, pump free water from the dredged non-TSCA sediment in the scow barge, mix a suitable drying reagent to stabilize the dredged sediment in the pug mill system, transfer sediment to the sediment stabilization area and load stabilized dredged material into trucks. Includes debris removal, transfer the debris to the staging area, decontamination of the debris. Also includes performing dredging in accordance with BMPs to meet specified resuspension performance standards. Payment is based on in situ volume of dredge material as measured by pre-dredging and post-dredging surveys. Cost for installing, monitoring, maintaining, and removal of turbidity controls around the perimeter of Dredge Areas as described in the Contract Documents shall be included. This line item also includes the additional operation and maintenance of the water treatment system.
B2	Redredge Beyond Limits at Owner's Direction Non-TSCA Between 14th	At the Owner's direction, this line item includes providing labor, materials and equipment

TABLE 2

Unit Price Items

Item No.	Item	Measurement Parameters
	Street Bridge and Pennsylvania Avenue Bridge (Area 2)	necessary to perform mechanical dredging of Non-TSCA sediment, pump free water from the dredged non-TSCA sediment in the scow barge, mix a suitable drying reagent to stabilize the dredged sediment in the pug mill system, transfer sediment to the sediment stabilization area and load stabilized dredged material into trucks. Includes debris removal, transfer the debris to the staging area, decontamination of the debris. Also includes performing dredging in accordance with BMPs to meet specified resuspension performance standards. Payment is based on in situ volume of dredge material as measured by pre-dredging and post-dredging surveys. Cost for installing, monitoring, maintaining, and removal of turbidity controls around the perimeter of Dredge Areas as described in the Contract Documents shall be included. This line item also includes the additional operation and maintenance of the water treatment system.
B3	Redredge Beyond Limits at Owner's Direction Non-TSCA Between Pennsylvania Avenue Bridge and 8th Street Bridge (Area 3)	At the Owner's direction, this line item includes providing labor, materials and equipment necessary to perform mechanical dredging of Non-TSCA sediment, pump free water from the dredged non-TSCA sediment in the scow barge, mix a suitable drying reagent to stabilize the dredged sediment in the pug mill system, transfer sediment to the sediment stabilization area and load stabilized dredged material into trucks. Includes debris removal, transfer the debris to the staging area, decontamination of the debris. Also includes performing dredging in accordance with BMPs to meet specified resuspension performance standards. Payment is based on in situ volume of dredge material as measured by pre-dredging and post-dredging surveys. Cost for installing, monitoring, maintaining, and removal of turbidity controls around the perimeter of Dredge Areas as described in the Contract Documents shall be included. This line item also includes the additional operation and maintenance of the water treatment system.
B4	Redredge Beyond Limits at Owner's Direction TSCA	At the Owner's direction, this line item includes providing labor, materials and equipment necessary to perform mechanical dredging of TSCA sediment, pump free water from the dredged TSCA sediment in the scow barge, mix a suitable drying reagent to stabilize the dredged sediment in the pug mill system, transfer sediment to the sediment stabilization area and load stabilized dredged material into trucks. Includes debris removal, transfer

TABLE 2

Unit Price Items

Item No.	Item	Measurement Parameters
		the debris to the staging area, decontamination of the debris. Also includes performing dredging in accordance with BMPs to meet specified resuspension performance standards. Payment is based on in situ volume of dredge material as measured by pre-dredging and post-dredging surveys. Cost for installing, monitoring, maintaining, and removal of turbidity controls around the perimeter of Dredge Areas as described in the Contract Documents shall be included. This line item also includes the additional operation and maintenance of the water treatment system.
B6	Delivery of Sand	This line item includes providing, transporting, and offloading the sand for the 6 – 12-inch sand cover over the river bottom.
B7	Placement of 6 - 12-inch Sand Layer	This line item includes providing labor, equipment, and materials necessary to place 6 - 12-inches of sand cover over the river bottom as specified and as directed by Owner. Payment is based on pre- and post-placement bathymetric surveys of area(s) receiving sand cover.
B8	Remove Embedded Wooden Piling Under Bridges	This line item includes providing labor, equipment, and materials necessary to remove embedded wooded piling under bridges as directed by Owner.
B9	Dredge Standby Time Upstream of 14th Bridge (Area 1)	This line item includes the cost of labor, equipment, and materials associated with situations outside of Contractor's control. It does not include the time/costs included in Contractor's base bid items between dredging, post-dredge surveying, post-dredge sediment confirmation sampling, receipt of analytical results and decision-making within a reasonable time period defined as 2 weeks from sample collection, and any subsequent direction to redredge an area.

TABLE 2

Unit Price Items

Item No.	Item	Measurement Parameters
B10	Dredge Standby Time Between 14th and Penn Bridges (Area 2)	This line item includes the cost of labor, equipment, and materials associated with situations outside of Contractor's control. It does not include the time the time/costs included in Contractor's base bid items between dredging, post-dredge surveying, post-dredge sediment confirmation sampling, receipt of analytical results and decision-making within a reasonable time period defined as 2 weeks from sample collection, and any subsequent direction to redredge an area.
B11	Dredge Standby Time Between Penn and 8th Bridges (Area 3)	This line item includes the cost of labor, equipment, and materials associated with situations outside of Contractor's control. It does not include the time the time/costs included in Contractor's base bid items between dredging, post-dredge surveying, post-dredge sediment confirmation sampling, receipt of analytical results and decision-making within a reasonable time period defined as 2 weeks from sample collection, and any subsequent direction to redredge an area.
B12	Dredge Standby Time Due to PRS Issues	This line item includes the cost of labor, equipment, and materials associated with situations outside of Contractor's control.
B13	Sand Capping Standby Time	This line item includes the cost of labor, equipment, and materials associated with situations outside of Contractor's control. It does not include time to verify the thickness of sand placed.
B14	Sediment Solidification Operations Delays	This line item includes the cost of labor, equipment, and materials associated with situations outside of Contractor's control.

PAYMENT APPLICATION AND CERTIFICATE

DATE: _____

SHEET 1 OF 17

APPLICATION NO: _____

PERIOD: FROM _____ TO _____ 20 _____

PROJECT: _____ PROJECT NO: _____

CONTRACTOR: _____

1. Original Contract Sum $ _____

2. Contract Modifications Approved in Previous Applications:

Additions $ _____ Deductions $ _____

3. Contract Modifications Approved this Period (List Contract Modifications Nos. _____)

Additions $ _____ Deductions $ _____

4. Net Change by Contract Modifications (sum of Lines 2 and 3) $ _____

5. Revised Contract Amount (Sum of Lines 1 and 4) $ _____

6. Total Value of Work to Date (Estimate Attached) $ _____

7. Percent Project Complete (Line 6 ÷ Line 5) x 100= _____ %

8. Total Materials on Hand (Listing Attached) $ _____

9. Subtotal - Work Completed and Stored (Sum of Lines 6 and 8) $ _____

10. Total Retainage (_____ % x Line 9) $ _____

11. Total Earned to Date, Less Retainage (Line 9 less Line 10) $ _____

12. Less Previous Certificates for Payment (item 11 from Previous Application) $ _____

13. Current Payment Due (Line 11 less Line 12) $ _____

The undersigned Contractor certifies that the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that the current payment shown herein is now due, and that title for all Work, materials, and equipment covered in this Application will pass to the Owner free and clear of all liens at the time of payment.

_____ _____ _____

Contractor By Date

I hereby acknowledge that the material and labor involved on the above estimate is correct to the best of my knowledge, information and belief, and payment on same is due Contractor.

_____ _____

UNITED STATES ENVIRONMENTAL; PROTECTION AGENCY Date

SECTION 01 31 13
PROJECT COORDINATION

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational:

1. Statement of Qualification (SOQ) for surveyor.
2. Photographs:
   a. Digital Images: Submit on compact disc within 5 days of being taken.
3. Video Recordings: Submit one copy, including updated copy of project video log, within 5 days of being taken.

1.02 UTILITY NOTIFICATION AND COORDINATION

A. Coordinate the Work with various utilities within Project limits. Notify applicable utilities prior to commencing Work, if damage occurs, or if conflicts or emergencies arise during Work.

1. Digger's Hotline:
   a. Telephone: 800-242-8511.
2. Alliant Energy:
   a. Telephone: 800-255-4268.
3. Charter Communications (Phone and Internet):
   a. Telephone: 888-438-2427.
4. Sheboygan Water Utility:
   a. Telephone: 920-459-3800.

1.03 ADJACENT FACILITIES AND PROPERTIES

A. Examination:

1. After Effective Date of the Agreement and before Work at Site is started, Contractor, Engineer, and affected property owners and utility owners shall make a thorough examination of pre-existing conditions including existing buildings, structures, and other improvements in vicinity of Work, as applicable, which could be damaged by construction operations.
2. Periodic reexamination shall be jointly performed to include, but not limited to, cracks in structures, settlement, leakage, and similar conditions.

B. Documentation:

1. Record and submit documentation of observations made on examination inspections. Contractor will photo document pre-construction conditions.
2. Upon receipt, Engineer will review, sign, and return one record copy of documentation to Contractor to be kept on file in field office.
3. Such documentation shall be used as indisputable evidence in ascertaining whether and to what extent damage occurred as a result of Contractor's operations, and is for the protection of adjacent property owners, Contractor, and Owner.

1.04 CONSTRUCTION PHOTOGRAPHS

A. Photographically document all phases of the project including preconstruction, construction progress, and post-construction.

B. Engineer shall have the right to select the subject matter and vantage point from which photographs are to be taken.

C. Preconstruction and Post-Construction:

1. After Effective Date of the Agreement and before Work at Site is started, and again upon issuance of Substantial Completion, take a minimum of 48 exposures of Construction Site and property adjacent to perimeter of Construction Site.
2. Particular emphasis shall be directed to structures both inside and outside the Site.
3. Format: Digital, minimum resolution of 756 by 504 pixels and 24 bit, millions of color.

D. Construction Progress Photos:

1. Photographically demonstrate progress of construction, showing every aspect of Site and adjacent properties as well as interior and exterior of new or impacted structures.
2. Weekly: Take 48 exposures using Digital, minimum resolution of 756 by 504 pixels and 24 bit, millions of color.

E. Digital Images:

1. Archive using a commercially available photo management system.
2. Label each disk with Project and Owner's name, and week and year images were produced.

1.05 AUDIO-VIDEO RECORDINGS

A. Prior to beginning Work on Construction Site or of a particular area of the Work, and again within 10 days following date of Substantial Completion, videograph Construction Site and property adjacent to Construction Site.

B. In the case of preconstruction recording, no Work shall begin in the area prior to Engineer's review and approval of content and quality of video for that area.

C. Particular emphasis shall be directed to physical condition of existing vegetation, structures, and pavements within pipeline alignment and areas adjacent to and within the right-of-way or easement, and on Contractor storage and staging areas.

D. Engineer shall have right to select subject matter and vantage point from which videos are to be taken.

E. DVD Format and Quality:

1. DVD format, with sound.
2. Video:
    a. Produce bright, sharp, and clear images with accurate colors, free of distortion and other forms of picture imperfections.
    b. Electronically, and accurately display the month, day, year, and time of day of the recording.
3. Audio:
    a. Audio documentation shall be done clearly, precisely, and at a moderate pace.
    b. Indicate date, project name, and a brief description of the location of taping, including:
        1) Facility name.
        2) Street names or easements.
        3) Addresses of private property.
        4) Direction of coverage, including engineering stationing, if applicable.

F. Documentation:

1. DVD Tape Label:
    a. Tape number (numbered sequentially, beginning with 001).
    b. Project name.
    c. Applicable location by engineering stationing.
    d. Date and time of coverage.

2. Project Video Log: Maintain an ongoing log that incorporates above noted label information for videotapes on Project.

1.06 REFERENCE POINTS AND SURVEYS

A. Location and elevation of bench marks are shown on the Drawings.

B. Contractor's Responsibilities:

1. Provide additional survey and layout required to layout the Work.
2. Check and establish exact location of existing facilities prior to construction of new facilities and any connections thereto.
3. In event of discrepancy in data provided by Owner, request clarification before proceeding with Work.
4. Retain professional land surveyor or civil engineer registered in state of Project who shall perform or supervise engineering surveying necessary for additional construction staking and layout.
5. Maintain complete accurate log of survey Work as it progresses as a Record Document.
6. On request of Engineer, submit documentation.
7. Provide competent employee(s), tools, stakes, and other equipment and materials as Engineer may require to:
   a. Establish control points, lines, and easement boundaries.
   b. Check layout, survey, and measurement Work performed by others.
   c. Measure quantities for payment purposes.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 GENERAL

1.01 GENERAL

A. Contractor will schedule physical arrangements for meetings throughout progress of the Work, prepare meeting agenda with regular participant input and distribute with written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and reproduce and distribute copies of minutes within 24 hours after each meeting to participants and parties affected by meeting decisions.

1.02 PRECONSTRUCTION CONFERENCE

A. Contractor shall be prepared to discuss the following subjects, as a minimum:

1. Required schedules.
2. Status of Bonds and insurance.
3. Sequencing of critical path work items.
4. Progress payment procedures.
5. Project changes and clarification procedures.
6. Use of Site, access, office and storage areas, security and temporary facilities.
7. Major product delivery and priorities.
8. Contractor’s safety plan and representative.
9. Communication with PRS, USACE, shoreline property owners and local public, and project stakeholders.

B. Attendees will include:

1. Owner’s representatives.
2. Contractor’s office representative.
3. Contractor’s resident superintendent.
4. Contractor’s quality control representative.
5. Subcontractors’ representatives whom Contractor may desire or Engineer may request to attend.
6. Engineer’s representatives.
7. Local emergency providers (invited).
8. City and County of Sheboygan (invited).
9. PRS (invited).
10. WPSC (invited).
11. WDNR (invited).

12. USACE (invited).
13. Others as appropriate.

1.03 PRELIMINARY SCHEDULES REVIEW MEETING

A. As set forth in General Conditions and Section 01 32 00, Construction Progress Documentation.

1.04 PROGRESS MEETINGS

A. Contractor will schedule regular progress meetings at Site, conducted weekly to review the Work progress, Progress Schedule, Schedule of Submittals, Application for Payment, contract modifications, and other matters needing discussion and resolution.

B. Attendees will include:

1. Owner's representative(s), as appropriate.
2. Contractor, Subcontractors, and Suppliers, as appropriate.
3. Engineer's representative(s).
4. Others as appropriate.

1.05 QUALITY CONTROL MEETINGS

A. Scheduled by Contractor on regular basis and as necessary to review test and inspection reports, and other matters relating to quality control of the Work and work of other Contractors.

B. Attendees will include:

1. Contractor.
2. Contractor's designated quality control representative.
3. Subcontractors and Suppliers, as necessary.
4. Engineer's representatives.

1.06 OTHER MEETINGS

A. In accordance with Contract Documents and as may be required by Owner and Engineer.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Preliminary Progress Schedule: Submit at least 7 days prior to preconstruction conference.
2. Detailed Progress Schedule:
   a. Submit initial Detailed Progress Schedule within 30 days after Effective Date of the Agreement.
   b. Submit an Updated Progress Schedule at each update, in accordance with Article Detailed Progress Schedule.
3. Submit with Each Progress Schedule Submission:
   a. Contractor's certification that Progress Schedule submission is actual schedule being utilized for execution of the Work.
   b. Progress Schedule: One legible copy.
   c. Narrative Progress Report: Same number of copies as specified for Progress Schedule.
4. Prior to final payment, submit a final Updated Progress Schedule.
5. Daily Progress Report in accordance with Section 35 20 25.23, Mechanical Environmental Dredging.

1.02 PRELIMINARY PROGRESS SCHEDULE

A. In addition to basic requirements outlined in General Conditions, show a detailed schedule, beginning with Notice to Proceed, for minimum duration of 90 days, and a summary of balance of Project through Final Completion.

B. Show activities including, but not limited to the following:

1. Notice to Proceed.
2. Permits.
3. Submittals, with review time. Contractor may use Schedule of Submittals specified in Section 01 33 00, Submittal Procedures.
4. Early procurement activities for long lead equipment and materials.
5. Initial Site work.
6. Earthwork.
7. Specified Work sequences and construction constraints.
8. Contract Milestone and Completion Dates.
9. Owner-furnished products delivery dates or ranges of dates.

10. Major structural, mechanical, equipment, electrical, architectural, and instrumentation and control Work.
11. System startup summary.
12. Project close-out summary.
13. Demobilization summary.

C. Update Preliminary Progress Schedule monthly at a minimum as part of progress payment process. Failure to do so may result in the Owner withholding all or part of the monthly progress payment until the Preliminary Progress Schedule is updated in a manner acceptable to Owner.

D. Format: In accordance with Article Progress Schedule—Bar Chart.

1.03 DETAILED PROGRESS SCHEDULE

A. In addition to requirements of General Conditions, submit Detailed Progress Schedule beginning with Notice to Proceed and continuing through Final Completion.

B. Show the duration and sequences of activities required for complete performance of the Work reflecting means and methods chosen by Contractor.

C. When accepted by Owner, Detailed Progress Schedule will replace Preliminary Progress Schedule and become Baseline Schedule. Subsequent revisions will be considered as Updated Progress Schedules.

D. Format: In accordance with Article Progress Schedule—Bar Chart.

E. Update weekly to reflect actual progress and occurrences to date, including weather delays.

1.04 PROGRESS SCHEDULE—BAR CHART

A. General: Comprehensive bar chart schedule, generally as outlined in Associated General Contractors of America (AGC) 580, “Construction Project Planning and Scheduling Guidelines.” If a conflict occurs between the AGC publication and this Specification, this Specification shall govern.

B. Format:

1. Unless otherwise approved, white paper, 11-inch by 17-inch sheet size.
2. Title Block: Show name of project and Owner, date submitted, revision or update number, and name of scheduler.
3. Identify horizontally, across the top of the schedule, the time frame by year, month, and day.

4. Identify each activity with a unique number and a brief description of the Work associated with that activity.
5. Legend: Describe standard and special symbols used.

C. Contents: Identify, in chronological order, those activities reasonably required to complete the Work, including as applicable, but not limited to:

1. Obtaining permits, submittals for early product procurement, and long lead time items.
2. Mobilization and other preliminary activities.
3. Initial Site work.
4. Specified Work sequences, constraints, and Milestones, including Substantial Completion date(s).
5. Subcontract Work.
6. Major equipment design, fabrication, factory testing, and delivery dates.
7. Sitework.
8. Dredge Work.
9. Dewatering Work.
10. Sediment transportation and disposal Work.
11. Sand cover Work.
12. Other important Work for each major facility.
13. Equipment and system startup and test activities.
14. Project closeout and cleanup.
15. Demobilization.

1.05 PROGRESS OF THE WORK

A. Updated Progress Schedule shall reflect:

1. Progress of Work to within 5 working days prior to submission.
2. Approved changes in Work scope and activities modified since submission.
3. Delays in Submittals or resubmittals, deliveries, or Work.
4. Adjusted or modified sequences of Work.
5. Other identifiable changes.
6. Revised projections of progress and completion.
7. Report of changed logic.

B. Produce detailed sub-schedules during Project, upon request of Owner or Engineer, to further define critical portions of the Work such as facility shutdowns.

C. If Contractor fails to complete activity by its latest scheduled completion date and this Failure is anticipated to extend Contract Times (or Milestones), Contractor shall, within 7 days of such failure, submit a written statement as to how Contractor intends to correct nonperformance and return to acceptable current Progress Schedule. Actions by Contractor to complete the Work within Contract Times (or Milestones) will not be justification for adjustment to Contract Price or Contract Times.

D. Owner may order Contractor to increase plant, equipment, labor force or working hours if Contractor fails to:

1. Complete a Milestone activity by its completion date.
2. Satisfactorily execute Work as necessary to prevent delay to overall completion of Project, at no additional cost to Owner.

1.06 NARRATIVE PROGRESS REPORT

A. Format:

1. Organize same as Progress Schedule.
2. Identify, on a cover letter, reporting period, date submitted, and name of author of report.

B. Contents:

1. Number of days worked over the period, work force on hand, construction equipment on hand (including utility vehicles such as pickup trucks, maintenance vehicles, stake trucks).
2. General progress of Work, including a listing of activities started and completed over the reporting period, mobilization/demobilization of subcontractors, and major milestones achieved.
3. Contractor’s plan for management of Site (e.g., lay down and staging areas, construction traffic), utilization of construction equipment, buildup of trade labor, and identification of potential Contract changes.
4. Identification of new activities and sequences as a result of executed Contract changes.
5. Documentation of weather conditions over the reporting period, and any resulting impacts to the work.
6. Description of actual or potential delays, including related causes, and the steps taken or anticipated to mitigate their impact.
7. Changes to activity logic.
8. Changes to the critical path.
9. Identification of, and accompanying reason for, any activities added or deleted since the last report.

10. Steps taken to recover the schedule from Contractor-caused delays.

1.07 SCHEDULE ACCEPTANCE

A. Owner's acceptance will demonstrate agreement that:

1. Proposed schedule is accepted with respect to:
   a. Contract Times, including Final Completion and all intermediate Milestones are within the specified times.
   b. Specified Work sequences and constraints are shown as specified.
   c. Specified Owner-furnished Equipment or Material arrival dates, or range of dates, are included.
   d. Access restrictions are accurately reflected**.**
   e. Startup and testing times are as specified.
   f. Submittal review times are as specified.
   g. Startup testing duration is as specified and timing is acceptable.
2. In all other respects, Owner's acceptance of Contractor's schedule indicates that, in the Owner's judgment, schedule represents reasonable plan for constructing Project in accordance with the Contract Documents. Owner's review will not make any change in Contract requirements. Lack of comment on any aspect of schedule that is not in accordance with the Contract Documents will not thereby indicate acceptance of that change, unless Contractor has explicitly called the nonconformance to Owner's attention in submittal. Schedule remains Contractor's responsibility and Contractor retains responsibility for performing all activities, for activity durations, and for activity sequences required to construct Project in accordance with the Contract Documents.

B. Unacceptable Preliminary Progress Schedule:

1. Make requested corrections; resubmit within 5 days.
2. Until acceptable to Owner as Baseline Progress Schedule, continue review and revision process, during which time Contractor shall update schedule on a monthly basis to reflect actual progress and occurrences to date.

C. Unacceptable Detailed Progress Schedule:

1. Make requested corrections; resubmit within 5 days.
2. Until acceptable to Owner as Baseline Progress Schedule, continue review and revision process.

D. Narrative Report: All changes to activity duration and sequences, including addition or deletion of activities subsequent to Owner's acceptance of Baseline Progress Schedule, shall be delineated in Narrative Report current with proposed Updated Progress Schedule.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 DEFINITIONS

A. Action Submittal: Written and graphic information submitted by Contractor that requires Owner's approval.

B. Informational Submittal: Information submitted by Contractor that requires Owner's review and determination that submitted information is in accordance with the Conditions of the Contract.

1.02 PROCEDURES

A. Direct submittals to Owner, unless specified otherwise.

B. Transmittal of Submittal:

1. Contractor shall:
   a. Review each submittal and check for compliance with Contract Documents.
   b. Stamp each submittal with uniform approval stamp before submitting to Owner.
      1) Stamp to include Project name, submittal number, Specification number, Contractor's reviewer name, date of Contractor's approval, and statement certifying submittal has been reviewed, checked, and approved for compliance with Contract Documents.
      2) Owner will not review submittals that do not bear Contractor's approval stamp and will return them without action.
2. Complete, sign, and transmit with each submittal package, one Transmittal of Contractor's Submittal form attached at end of this Section.
3. Identify each submittal with the following:
   a. Numbering and Tracking System:
      1) Sequentially number each submittal.
      2) Resubmission of submittal shall have original number with sequential alphabetic suffix.
   b. Specification section and paragraph to which submittal applies.
   c. Project title and Owner's project number.
   d. Date of transmittal.

e. Names of Contractor, Subcontractor or Supplier, and manufacturer as appropriate.

4. Identify and describe each deviation or variation from Contract Documents.

C. Format:

1. Do not base Shop Drawings on reproductions of Contract Documents.
2. Package submittal information by individual specification section. Do not combine different specification sections together in submittal package, unless otherwise directed in specification.
3. Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Contract Documents.
4. Index with labeled tab dividers in orderly manner.

D. Timeliness: Schedule and submit in accordance Schedule of Submittals, and requirements of individual specification sections.

E. Processing Time:

1. Time for review shall commence on Owner's receipt of submittal.
2. Owner will act upon Contractor's submittal and transmit response to Contractor not later than 15 days after receipt, unless otherwise specified.
3. Resubmittals will be subject to same review time.
4. No adjustment of Contract Times or Price will be allowed as a result of delays in progress of Work caused by rejection and subsequent resubmittals.

F. Resubmittals: Clearly identify each correction or change made.

G. Incomplete Submittals:

1. Owner will return entire submittal for Contractor's revision if preliminary review deems it incomplete.
2. When any of the following are missing, submittal will be deemed incomplete:
   a. Contractor's review stamp; completed and signed.
   b. Transmittal of Contractor's Submittal; completed and signed.
   c. Insufficient number of copies.

H. Submittals not required by Contract Documents:

1. Will not be reviewed and will be returned stamped “Not Subject to Review.”
2. Owner will keep one copy and return submittal to Contractor.

1.03 ACTION SUBMITTALS

A. Prepare and submit Action Submittals required by individual specification sections.

B. Shop Drawings:

1. Identify and Indicate:
   a. Applicable Contract Drawing and Detail number, products, units and assemblies, and system or equipment identification or tag numbers.
   b. Equipment and Component Title: Identical to title shown on the Drawings.
   c. Critical field dimensions and relationships to other critical features of Work. Note dimensions established by field measurement.
   d. Project-specific information drawn accurately to scale.
2. Manufacturer’s standard schematic drawings and diagrams as follows:
   a. Modify to delete information that is not applicable to the Work.
   b. Supplement standard information to provide information specifically applicable to the Work.
3. Product Data: Provide as specified in individual specifications.
4. Foreign Manufacturers: When proposed, include names and addresses of at least two companies that maintain technical service representatives close to Project.

C. Samples:

1. Copies: Two, unless otherwise specified in individual specifications.
2. Preparation: Mount, display, or package Samples in manner specified to facilitate review of quality. Attach label on unexposed side that includes the following:
   a. Manufacturer name.
   b. Model number.
   c. Material.
   d. Sample source.
3. Manufacturer’s Color Chart: Units or sections of units showing full range of colors, textures, and patterns available.

4. Full-size Samples:
    a. Size as indicated in individual specification section.
    b. Prepared from same materials to be used for the Work.
    c. Cured and finished in manner specified.
    d. Physically identical with product proposed for use.

D. Action Submittal Dispositions: Owner will review, comment, stamp, and distribute as noted:

1. Approved:
    a. Contractor may incorporate product(s) or implement Work covered by submittal.
    b. Distribution:
        1) One copy furnished to Engineer.
        2) One copy retained in Owner's file.
        3) Remaining copies returned to Contractor appropriately annotated.
2. Approved as Noted:
    a. Contractor may incorporate product(s) or implement Work covered by submittal, in accordance with Owner's notations.
    b. Distribution:
        1) One copy furnished to Engineer.
        2) One copy retained in Owner's file.
        3) Remaining copies returned to Contractor appropriately annotated.
3. Partial Approval, Resubmit as Noted:
    a. Make corrections or obtain missing portions, and resubmit.
    b. Except for portions indicated, Contractor may begin to incorporate product(s) or implement Work covered by submittal, in accordance with Owner's notations.
    c. Distribution:
        1) One copy furnished to Engineer.
        2) One copy retained in Owner's file.
        3) Remaining copies returned to Contractor appropriately annotated.
4. Revise and Resubmit:
    a. Contractor may not incorporate product(s) or implement Work covered by submittal.
    b. Distribution:
        1) One copy retained in Owner's file.
        2) Remaining copies returned to Contractor appropriately annotated.

1.04 INFORMATIONAL SUBMITTALS

A. General:

1. Refer to individual specification sections for specific submittal requirements.
2. Owner will review each submittal. If submittal meets conditions of the Contract, Owner will forward copy to appropriate parties. If Owner determines submittal does not meet conditions of the Contract and is therefore considered unacceptable, Owner will retain one copy and return remaining copy with review comments to Contractor, and require that submittal be corrected and resubmitted.

B. Certificates:

1. General:
   a. Provide notarized statement that includes signature of entity responsible for preparing certification.
   b. Signed by officer or other individual authorized to sign documents on behalf of that entity.
2. Welding: In accordance with individual specification sections.
3. Installer: Prepare written statements on manufacturer's letterhead certifying installer complies with requirements as specified in individual specification section.
4. Material Test: Prepared by qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.
5. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by Laws and Regulations or governing agency or specified in individual specification sections.

C. Construction Photographs: In accordance with Section 01 31 13, Project Coordination, and as may otherwise be required in Contract Documents.

D. Closeout Submittals: In accordance with Section 01 77 00, Closeout Procedures.

E. Contractor-design Data (related to temporary construction):

1. Written and graphic information.
2. List of assumptions.
3. List of performance and design criteria.
4. Summary of loads or load diagram, if applicable.
5. Calculations.
6. List of applicable codes and regulations.

7. Name and version of software.
8. Information requested in individual specification section.

F. Manufacturer's Instructions: Written or published information that documents manufacturer's recommendations, guidelines, and procedures in accordance with individual specification section.

G. Schedules:

1. Schedule of Submittals: Prepare separately or in combination with Progress Schedule as specified in Section 01 32 00, Construction Progress Documentation.
   a. Show for each, at a minimum, the following:
      1) Specification section number.
      2) Identification by numbering and tracking system as specified under Paragraph Transmittal of Submittal.
      3) Estimated date of submission to Owner, including reviewing and processing time.
   b. On a weekly and monthly basis, submit updated Schedule of Submittals to Owner if changes have occurred or resubmittals are required.
2. Schedule of Values: In accordance with Section 01 29 00, Payment Procedures.
3. Schedule of Estimated Progress Payments: In accordance with Section 01 29 00, Payment Procedures.

H. Special Guarantee: Supplier's written guarantee as required in individual specification sections.

I. Statement of Qualification: Evidence of qualification, certification, or registration as required in Contract Documents to verify qualifications of professional land surveyor, engineer, materials testing laboratory, specialty Subcontractor, trade, Specialist, consultant, installer, and other professionals.

J. Submittals Required by Laws, Regulations, and Governing Agencies:

1. Promptly submit notifications, reports, certifications, payrolls, and otherwise as may be required, directly to the applicable federal, state, or local governing agency or their representative.
2. Transmit to Owner's records one copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.

K. Test, Evaluation, and Inspection Reports:

1. General: Shall contain signature of person responsible for test or report.
2. Factory:
   a. Identification of product and specification section, type of inspection or test with referenced standard or code.
   b. Date of test, Project title and number, and name and signature of authorized person.
   c. Test results.
   d. If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
   e. Provide interpretation of test results, when requested by Owner.
   f. Other items as identified in individual specification sections.
3. Field:
   a. As a minimum, include the following:
      1) Project title and number.
      2) Date and time.
      3) Record of temperature and weather conditions.
      4) Identification of product and specification section.
      5) Type and location of test, Sample, or inspection, including referenced standard or code.
      6) Date issued, testing laboratory name, address, and telephone number, and name and signature of laboratory inspector.
      7) If test or inspection deems material or equipment not in compliance with Contract Documents, identify corrective action necessary to bring into compliance.
      8) Provide interpretation of test results, when requested by Owner.
      9) Other items as identified in individual specification sections.

1.05 SUPPLEMENTS

A. The supplements listed below, following “End of Section”, are part of this specification.

1. Forms: Transmittal of Contractor’s Submittal.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

TRANSMITTAL OF CONTRACTOR'S SUBMITTAL

(ATTACH TO EACH SUBMITTAL)

DATE: _____

TO: _____ _____ _____ _____ _____ **FROM**: _____ Contractor _____ _____ _____	Submittal No.: _____ ☐ New Submittal ☐ Resubmittal Project: _____ Project No.: _____ Specification Section No.: _____ **(Cover only one section with each transmittal)** Schedule Date of Submittal: _____

SUBMITTAL TYPE:	☐ Shop Drawing	☐ Sample	☐ Informational
	☐ Deferred		

The following items are hereby submitted:

Number of Copies	Description of Item Submitted (Type, Size, Model Number, Etc.)	Spec. and Para. No.	Drawing or Brochure Number	Contains Variation to Contract	
				No	Yes

Contractor hereby certifies that (i) Contractor has complied with the requirements of Contract Documents in preparation, review, and submission of designated Submittal and (ii) the Submittal is complete and in accordance with the Contract Documents and requirements of laws and regulations and governing agencies.

By: _____
Contractor (Authorized Signature)

SECTION 01 42 13
ABBREVIATIONS AND ACRONYMS

PART 1 GENERAL

1.01 REFERENCE TO STANDARDS AND SPECIFICATIONS OF TECHNICAL SOCIETIES

A. Reference to standards and specifications of technical societies and reporting and resolving discrepancies associated therewith shall be as provided in Article 3 of the General Conditions, and as may otherwise be required herein and in the individual Specification sections.

B. Work specified by reference to published standard or specification of government agency, technical association, trade association, professional society or institute, testing agency, or other organization shall meet requirements or surpass minimum standards of quality for materials and workmanship established by designated standard or specification.

C. Where so specified, products or workmanship shall also meet or exceed additional prescriptive or performance requirements included within Contract Documents to establish a higher or more stringent standard of quality than required by referenced standard.

D. Where two or more standards are specified to establish quality, product and workmanship shall meet or exceed requirements of most stringent.

E. Where both a standard and a brand name are specified for a product in Contract Documents, proprietary product named shall meet or exceed requirements of specified reference standard.

F. Copies of standards and specifications of technical societies:

1. Copies of applicable referenced standards have not been bound in these Contract Documents.
2. Where copies of standards are needed by Contractor, obtain a copy or copies directly from publication source and maintain in an orderly manner at the Site as Work Site records, available to Contractor’s personnel, Subcontractors, Owner, and Engineer.

1.02 ABBREVIATIONS

A. Following is a list of abbreviations to which references may be made in the Contract Documents.

1.	AA	Aluminum Association
2.	AABC	Associated Air Balance Council
3.	AAMA	American Architectural Manufacturers Association
4.	AASHTO	American Association of State Highway and Transportation Officials
5.	ABMA	American Bearing Manufacturers' Association
6.	ACI	American Concrete Institute
7.	AEIC	Association of Edison Illuminating Companies
8.	AGA	American Gas Association
9.	AGMA	American Gear Manufacturers' Association
10.	AI	Asphalt Institute
11.	AISC	American Institute of Steel Construction
12.	AISI	American Iron and Steel Institute
13.	AITC	American Institute of Timber Construction
14.	ALS	American Lumber Standards
15.	AMCA	Air Movement and Control Association
16.	ANSI	American National Standards Institute
17.	APA	APA – The Engineered Wood Association
18.	API	American Petroleum Institute
19.	APWA	American Public Works Association
20.	AHRI	Air-Conditioning, Heating, and Refrigeration Institute
21.	ASA	Acoustical Society of America
22.	ASABE	American Society of Agricultural and Biological Engineers
23.	ASCE	American Society of Civil Engineers
24.	ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
25.	ASME	American Society of Mechanical Engineers
26.	ASNT	American Society for Nondestructive Testing
27.	ASSE	American Society of Sanitary Engineering
28.	ASTM	ASTM International
29.	AWI	Architectural Woodwork Institute
30.	AWPA	American Wood Preservers' Association
31.	AWPI	American Wood Preservers' Institute
32.	AWS	American Welding Society
33.	AWWA	American Water Works Association
34.	BHMA	Builders Hardware Manufacturers' Association
35.	CBM	Certified Ballast Manufacturer

36.	CDA	Copper Development Association
37.	CGA	Compressed Gas Association
38.	CISPI	Cast Iron Soil Pipe Institute
39.	CMAA	Crane Manufacturers' Association of America
40.	CRSI	Concrete Reinforcing Steel Institute
41.	CS	Commercial Standard
42.	CSA	Canadian Standards Association
43.	CSI	Construction Specifications Institute
44.	CY	Cubic Yard
45.	DIN	Deutsches Institut für Normung e.V.
46.	DIPRA	Ductile Iron Pipe Research Association
47.	EIA	Electronic Industries Alliance
48.	EJCDC	Engineers Joint Contract Documents' Committee
49.	EPA	Environmental Protection Agency
50.	ETL	Electrical Test Laboratories
51.	FAA	Federal Aviation Administration
52.	FCC	Federal Communications Commission
53.	FDA	Food and Drug Administration
54.	FEMA	Federal Emergency Management Agency
55.	FIPS	Federal Information Processing Standards
56.	FM	FM Global
57.	Fed. Spec.	Federal Specifications (FAA Specifications)
58.	FS	Federal Specifications and Standards (Technical Specifications)
59.	GA	Gypsum Association
60.	GANA	Glass Association of North America
61.	GLNPO	Great Lakes National Program Office
62.	HASP	Health and Safety Plan
63.	HI	Hydraulic Institute
64.	HMI	Hoist Manufacturers' Institute
65.	IBC	International Building Code
66.	ICBO	International Conference of Building Officials
67.	ICC	International Code Council
68.	ICEA	Insulated Cable Engineers' Association
69.	IFC	International Fire Code
70.	IEEE	Institute of Electrical and Electronics Engineers, Inc.
71.	IESNA	Illuminating Engineering Society of North America
72.	IFI	Industrial Fasteners Institute
73.	IGMA	Insulating Glass Manufacturer's Alliance
74.	IMC	International Mechanical Code
75.	INDA	Association of the Nonwoven Fabrics Industry

76.	IPC	International Plumbing Code
77.	ISA	Instrumentation, Systems, and Automation Society
78.	ISO	International Organization for Standardization
79.	ITL	Independent Testing Laboratory
80.	JIC	Joint Industry Conferences of Hydraulic Manufacturers
81.	MIA	Marble Institute of America
82.	MIL	Military Specifications
83.	MMA	Monorail Manufacturers' Association
84.	MSS	Manufacturer's Standardization Society
85.	NAAMM	National Association of Architectural Metal Manufacturers
86.	NACE	NACE International
87.	NBGQA	National Building Granite Quarries Association
88.	NEBB	National Environmental Balancing Bureau
89.	NEC	National Electrical Code
90.	NECA	National Electrical Contractors Association
91.	NEMA	National Electrical Manufacturers' Association
92.	NESC	National Electrical Safety Code
93.	NETA	InterNational Electrical Testing Association
94.	NFPA	National Fire Protection Association
95.	NHLA	National Hardwood Lumber Association
96.	NICET	National Institute for Certification in Engineering Technologies
97.	NIST	National Institute of Standards and Technology
98.	NRCA	National Roofing Contractors Association
99.	NRTL	Nationally Recognized Testing Laboratories
100.	NSF	NSF International
101.	NSPE	National Society of Professional Engineers
102.	NTMA	National Terrazzo and Mosaic Association
103.	NWWDA	National Wood Window and Door Association
104.	OSHA	Occupational Safety and Health Act (both Federal and State)
105.	PAH	Polynuclear Aromatic Hydrocarbon
106.	PCB	Polychlorinated Biphenyl
107.	PCI	Precast/Prestressed Concrete Institute
108.	PEI	Porcelain Enamel Institute
109.	PPI	Plastic Pipe Institute
110.	PS	Product Standards Section-U.S. Department of Commerce
111.	RMA	Rubber Manufacturers' Association
112.	RUS	Rural Utilities Service
113.	SAE	SAE International

114.	SDI	Steel Deck Institute
115.	SDI	Steel Door Institute
116.	SJI	Steel Joist Institute
117.	SMACNA	Sheet Metal and Air Conditioning Contractors National Association
118.	SSO	Site Safety Officer
119.	SPI	Society of the Plastics Industry
120.	SSPC	The Society for Protective Coatings
121.	STI/SPFA	Steel Tank Institute/Steel Plate Fabricators Association
122.	SWI	Steel Window Institute
123.	TEMA	Tubular Exchanger Manufacturers' Association
124.	TCA	Tile Council of North America
125.	TIA	Telecommunications Industry Association
126.	TSCA	Toxic Substance Control Act
127.	UBC	Uniform Building Code
128.	UFC	Uniform Fire Code
129.	UL	Underwriters Laboratories Inc.
130.	UMC	Uniform Mechanical Code
131.	USBR	U.S. Bureau of Reclamation
132.	USCG	U.S. Coast Guard
133.	USEPA	U.S. Environmental Protection Agency
134.	WCLIB	West Coast Lumber Inspection Bureau
135.	WDNR	Wisconsin Department of Natural Resources
136.	WI	Wood Institute
137.	WWPA	Western Wood Products Association

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 45 16.13
CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this Section:

1. ASTM International (ASTM):
   a. D3740, Evaluation of Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
   b. E329, Use in the Evaluation of Testing and Inspection Agencies as Used in Construction.
2. City of Sheboygan Soil Erosion and Sediment Control Ordinance adopted under the authority granted by Section 62.234 Wisconsin Statutes.

1.02 DEFINITIONS

A. Contractor Quality Control (CQC): The means by which Contractor ensures that the construction, to include that performed by subcontractors and suppliers, complies with the requirements of the Contract.

1.03 SUBMITTALS

A. Informational Submittals:

1. CQC Plan: Submit, not later than 30 days after receipt of Notice to Proceed.
2. CQC Report: Submit, weekly, an original and one copy in report form.

1.04 OWNER'S QUALITY ASSURANCE

A. All Work is subject to Owner's quality assurance inspection and testing at all locations and at all reasonable times before acceptance to ensure strict compliance with the terms of the Contract Documents.

B. Owner's quality assurance inspections and tests are for the sole benefit of Owner and do not:

1. Relieve Contractor of responsibility for providing adequate quality control measures;

2. Relieve Contractor of responsibility for damage to or loss of the material before acceptance;
3. Constitute or imply acceptance; or
4. Affect the continuing rights of Owner after acceptance of the completed Work.

C. The presence or absence of a quality assurance inspector does not relieve Contractor from any Contract requirement.

D. Promptly furnish all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by Engineer.

E. Owner may charge Contractor for any additional cost of inspection or test when Work is not ready at the time specified by Contractor for inspection or test, or when prior rejection makes re-inspection or retest necessary. Quality assurance inspections and tests will be performed in a manner that will not unnecessarily delay the Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. Maintain an adequate inspection system and perform such inspections as will ensure that the Work conforms to the Contract Documents and required submittals.

B. Maintain complete inspection records and make them available at all times to Owner and Engineer.

C. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product that complies with the Contract Documents. The system shall cover all construction and demolition operations, both onsite and offsite, including Work by subcontractors, fabricators, suppliers and purchasing agents, and shall be keyed to the proposed construction sequence.

3.02 COORDINATION MEETING

A. After the Preconstruction Conference, but before start of construction, and prior to acceptance of the CQC Plan, schedule a meeting with Engineer and Owner to discuss the quality control system.

B. Develop a mutual understanding of the system details, including the forms for recording the CQC operations, control activities, testing, administration of the system for both onsite and offsite Work, and the interrelationship of Contractor's management and control with the Owner's Quality Assurance.

C. There may be occasions when subsequent conferences may be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures that may require corrective action by Contractor.

3.03 QUALITY CONTROL ORGANIZATION

A. CQC System Manager:

1. Designate an individual within Contractor's organization who will be responsible for overall management of CQC and have the authority to act in CQC matters for the Contractor.
2. CQC System Manager may perform other duties on the Project.
3. CQC System Manager shall be an experienced construction person, with a minimum of 3 years construction experience on similar type Work.
4. CQC System Manager shall report to the Contractor's project manager or someone higher in the organization. Project manager in this context shall mean the individual with responsibility for the overall quality and production management of the Project.
5. CQC System Manager shall be onsite during construction; periods of absence may not exceed 2 weeks at any one time.
6. Identify an alternate for CQC System Manager to serve with full authority during the System Manager's absence. The requirements for the alternate will be the same as for designated CQC System Manager.

B. CQC Staff:

1. Designate a CQC staff, available at the Site at all times during progress, with complete authority to take any action necessary to ensure compliance with the Contract. CQC staff members shall be subject to acceptance by Engineer.
2. CQC staff shall take direction from CQC System Manager in matters pertaining to QC.
3. CQC staff must be of sufficient size to ensure adequate QC coverage of Work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties, but must be fully qualified by experience and technical training to perform their assigned QC responsibilities and must be allowed sufficient time to carry out these responsibilities.

4. The actual strength of the CQC staff may vary during any specific Work period to cover the needs of the Project. Add additional staff when necessary for a proper CQC organization.

C. Organizational Changes: Obtain Engineer's acceptance before replacing any member of the CQC staff. Requests for changes shall include name, qualifications, duties, and responsibilities of the proposed replacement.

3.04 QUALITY CONTROL PHASING

A. CQC shall include at least three phases of control to be conducted by CQC System Manager for all definable features of Work, as follows:

1. Preparatory Phase:
   a. Notify Owner at least 48 hours in advance of beginning any of the required action of the preparatory phase.
   b. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The CQC System Manager shall instruct applicable CQC staff as to the acceptable level of workmanship required in order to meet Contract requirements.
   c. Document the results of the preparatory phase meeting by separate minutes prepared by the CQC System Manager and attached to the QC report.
   d. Perform prior to beginning Work on each definable feature of Work:
      1) Review applicable Contract Specifications.
      2) Review applicable Contract Drawings.
      3) Verify that all materials and/or equipment have been tested, submitted, and approved.
      4) Verify that provisions have been made to provide required control inspection and testing.
      5) Examine the Work area to verify that all required preliminary Work has been completed and is in compliance with the Contract.
      6) Perform a physical examination of required materials, equipment, and sample Work to verify that they are on hand, conform to approved Shop Drawing or submitted data, and are properly stored.
      7) Review the appropriate activity hazard analysis to verify safety requirements are met.
      8) Review procedures for constructing the Work, including repetitive deficiencies.

9) Review procedures for operating sediment processing equipment and water treatment system, including requirements for monitoring and reporting of results.
10) Document construction tolerances and workmanship standards for that phase of the Work.
11) Check to verify that the plan for the Work to be performed, if so required, has been accepted by Engineer.

2. Initial Phase:
   a. Accomplish at the beginning of a definable feature of Work:
      1) Notify Owner at least 48 hours in advance of beginning the initial phase.
      2) Perform prior to beginning Work on each definable feature of Work:
         a) Review minutes of the preparatory meeting.
         b) Check preliminary Work to verify compliance with Contract requirements.
         c) Verify required control inspection and testing.
         d) Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Comparison with sample panels is appropriate.
         e) Resolve all differences.
         f) Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
      3) Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the QC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
      4) The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.
3. Follow-up Phase:
   a. Perform daily checks to verify continuing compliance with Contract requirements, including control testing and environmental monitoring, until completion of the particular feature of Work.
   b. Daily checks shall be made a matter of record in the CQC documentation and shall document specific results of inspections for all features of Work for the day or shift.
   c. Conduct final follow-up checks and correct all deficiencies prior to the start of additional features of Work that will be affected by the deficient Work. Constructing upon or concealing nonconforming Work will not be allowed.

4. Additional Preparatory and Initial Phases: Additional preparatory and initial phases may be conducted on the same definable features of Work as determined by Owner if the quality of ongoing Work is unacceptable; or if there are changes in the applicable QC staff or in the onsite production supervision or work crew; or if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.05 CONTRACTOR QUALITY CONTROL PLAN

A. General:

1. Plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used.
2. An interim plan for the first 30 days of operation will be considered.
3. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of Work to be started.
4. Work outside of the features of Work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of Work to be started.

B. Content:

1. Plan shall cover the intended CQC organization for the entire Contract and shall include the following, as a minimum:
   a. Organization: Description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff will implement the three-phase control system (see Paragraph QC Phasing) for all aspects of the Work specified.
   b. CQC Staff: The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a QC function.
   c. Letters of Authority: A copy of a letter to the CQC System Manager signed by an authorized official of the firm, describing the responsibilities and delegating sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop Work which is not in compliance with the Contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities and responsibilities. Copies of these letters will also be furnished to Owner.

d. Submittals: Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers and purchasing agents.
e. Testing: Control, verification and acceptance testing procedures for each specific test to include the test name, frequency, specification paragraph containing the test requirements, the personnel and laboratory responsible for each type of test, and an estimate of the number of tests required.
f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests, including documentation.
g. Procedures for tracking deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.
h. Reporting procedures, including proposed reporting formats; include a copy of the CQC report form.

C. Acceptance of Plans: Acceptance of the Contractor's basic and addendum CQC plans is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. Owner reserves the right to require Contractor to make changes in the CQC plan and operations including removal of personnel, as necessary, to obtain the quality specified.

D. Notification of Changes: After acceptance of the CQC plan, Contractor shall notify Engineer, in writing, a minimum of 7 calendar days prior to any proposed change. Proposed changes are subject to acceptance by Engineer.

3.06 CONTRACTOR QUALITY CONTROL REPORT

A. As a minimum, prepare a CQC report for every 7 calendar days. Account for all days throughout the life of the Contract. Reports shall be signed and dated by CQC System Manager. Include copies of test reports and copies of reports prepared by QC staff.

B. Maintain current records of quality control operations, activities, and tests performed, including the Work of subcontractors and suppliers.

C. Records shall be on an acceptable form and shall be a complete description of inspections, the results of inspections, daily activities, tests, and other items, including but not limited to the following:

1. Contractor/subcontractor and their areas of responsibility.
2. Operating plant/equipment with hours worked, idle, or down for repair.

3. Work performed today, giving location, description, and by whom. When a network schedule is used, identify each phase of Work performed each day by activity number.
4. Test and/or control activities performed with results and references to specifications/plan requirements. The control phase should be identified (Preparatory, Initial, Follow-up). List deficiencies noted along with corrective action.
5. Material received with statement as to its acceptability and storage.
6. Identify submittals reviewed, with Contract reference, by whom, and action taken.
7. Offsite surveillance activities, including actions taken.
8. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
9. List instructions given/received and conflicts in Drawings and/or Specifications.
10. Contractor's verification statement.
11. Indicate a description of trades working on the Project; the number of personnel working; weather conditions encountered; and any delays encountered.
12. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in file work and workmanship comply with the Contract.

3.07 SUBMITTAL QUALITY CONTROL

A. Submittals shall be as specified in Section 01 33 00, Submittal Procedures. The CQC organization shall be responsible for certifying that all submittals are in compliance with the Contract requirements. Owner will furnish copies of test report forms upon request by Contractor. Contractor may use other forms as approved.

3.08 TESTING QUALITY CONTROL

A. Testing Procedure:

1. Perform tests specified or required to verify that control measures are adequate to provide a product which conforms to Contract requirements. Perform the following activities and record the following data:
   a. Verify testing procedures comply with contract requirements.
   b. Verify facilities and testing equipment are available and comply with testing standards.
   c. Check test instrument calibration data against certified standards.

d. Verify recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
e. Documentation:
    1) Record results of all tests taken, both passing and failing, on the CQC report for the date taken.
    2) Include specification paragraph reference, location where tests were taken, and the sequential control number identifying the test.
    3) Actual test reports may be submitted later, if approved by Engineer, with a reference to the test number and date taken.
    4) Provide directly to Engineer an information copy of tests performed by an offsite or commercial test facility. Test results shall be signed by an engineer registered in the state where the tests are performed.
    5) Failure to submit timely test reports, as stated, may result in nonpayment for related Work performed and disapproval of the test facility for this Contract.

B. Testing Laboratories: Laboratory facilities, including personnel and equipment, utilized for testing soils, concrete, asphalt and steel shall meet criteria detailed in ASTM D3740 and ASTM E329, and be accredited by the American Association of Laboratory Accreditation (AALA), National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHTO), or other approved national accreditation authority. Personnel performing concrete testing shall be certified by the American Concrete Institute (ACI).

3.09 COMPLETION INSPECTION

A. CQC System Manager shall conduct an inspection of the Work at the completion of all Work or any milestone established by a completion time stated in the Contract.

B. Punchlist:

1. CQC System Manager shall develop a punchlist of items which do not conform to the Contract requirements.
2. Include punchlist in the CQC report, indicating the estimated date by which the deficiencies will be corrected.
3. CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected and so notify the Owner.

4. These inspections and any deficiency corrections required will be accomplished within the time stated for completion of the entire Work or any particular increment thereof if the Project is divided into increments by separate completion dates.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Nursery and Landscape Association (ANLA): American Standards for Nursery Stock.
2. Federal Emergency Management Agency (FEMA).
3. National Fire Prevention Association (NFPA): 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.
4. Telecommunications Industry Association (TIA): 568-C, Commercial Building Telecommunications Cabling Standard.
5. U.S. Department of Agriculture (USDA): Urban Hydrology for Small Watersheds.
6. U.S. Weather Bureau: Rainfall-Frequency Atlas of the U.S. for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years.
7. 40 CFR 761.

1.02 SUBMITTALS

A. Informational Submittals:

1. Copies of permits and approvals for construction and operation as required by Laws and Regulations and governing agencies. Permits to be obtained by Contractor include:
   a. USACE Section 404/401.
   b. WDNR Chapter 30.
   c. WDNR WPDES Individual Wastewater Permit.
   d. WDNR WPDES General Construction Site Stormwater Permit.
   e. WDNR WPDES Carriage Interstitial Water Permit.
   f. City of Sheboygan Conditional Use Permit.

2. Temporary Utility Submittals: Electric power supply and distribution plans.

3. Temporary Construction Submittals:
   a. Access Roads: Routes, cross-sections, and drainage facilities.
   b. Parking area plans.

c. Contractor and Engineer's field offices, storage yard, and storage building plans, including gravel surfaced area.
d. Fencing and protective barrier locations and details.
e. Water treatment system process flow and location plan including identification of permitted discharge points.
f. Sediment Processing Area location plan.
g. Traffic and Routing Plans: As specified herein, and proposed revisions thereto.

4. Temporary Control Submittals:
   a. Noise Control Plan.
   b. Dust Control Plan.
   c. Soil Erosion and Sediment Control Plan.
   d. Stormwater Pollution Prevention Plan.
   e. Plan for decontamination of equipment that handles TSCA materials, disposal of waste materials and intended haul routes.

1.03 MOBILIZATION

A. Mobilization shall include, but not be limited to, these principal items:

1. Obtaining required permits.
2. Moving Contractor's and Engineer's field office and equipment required operations onto Site.
3. Installing temporary construction power, wiring, and lighting facilities.
4. Providing onsite communication facilities, including telephones.
5. Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.
6. Arranging for, and erection of, Contractor's work and storage yard.
7. Posting OSHA required notices and establishing safety programs and procedures.
8. Having Contractor's superintendent at Site full time.

B. Use area designated for Contractor's temporary facilities as shown on Drawings.

1.04 PROTECTION OF WORK AND PROPERTY

A. Keep Owner informed of serious onsite accidents and related claims.

B. Use of Explosives: No blasting or use of explosives will be allowed onsite.

C. Contractor shall provide 24-hour per day, 7 days per week site security.

1.05 VEHICULAR TRAFFIC

A. Traffic Routing Plan: Show sequence of construction affecting use of roadways, time required for each phase of the Work, provisions for decking over excavations and phasing of operations to provide necessary access, and plans for signing, barricading, and striping to provide passages for pedestrians and vehicles.

PART 2 PRODUCTS

2.01 OWNER AND ENGINEER'S FIELD OFFICE

A. Furnish equipment specified for exclusive use of Engineer and its representatives.

B. Ownership of equipment furnished under this article will remain, unless otherwise specified, that of Contractor.

C. Equipment furnished shall be new or like new in appearance and function.

D. Minimum Features:

1. 110-volt lighting and wall plugs.
2. Fluorescent ceiling lights.
3. Electric heating and self-contained air conditioning unit, properly sized for Project locale and conditions. Provide ample electric power to operate installed systems.
4. Railed stairways and landings at entrances.
5. Sign on entrance door reading USEPA / CH2M HILL, INC., letter height 4 inches minimum.
6. Exterior Door(s):
   a. Number: Two.
   b. Type: Solid core.
   c. Lock(s): Cylindrical; keyed alike.
7. Number of Windows: Seven.
8. Minimum Interior Height: 8 feet.

E. Trailer Type Mobile Structure: One.

F. Floor Space: Minimum 720 square feet.

G. All-metal frame; all-metal exterior, sides, and roof; and insulated double walls, floor, and roof.

H. Security guard screens on windows.

I. Number of Private Offices: Two, 12 feet by 12 feet.

J. Storage Room: One, 6 feet by 8 feet, with door with cylinder lock, keyed differently than exterior door locks. Provide two sets of keys.

K. Shelving in Storage Room: 72 linear feet, 18 inches deep.

L. Blinds or drapes on windows.

M. Work Surface: One, 30 inches by 12 feet at desk height of 29 inches from floor.

N. Office Equipment—General:

1. Bottled Water Service: One, with cooler capable of producing hot water and cold water.
2. Paper Towel Dispenser with Towels: One.
3. Desk Chair: Six, with the following characteristics:
    a. Five castor base.
    b. Adjustable height.
    c. Swivels.
    d. Locking Back.
    e. Adjustable seat back for height and angle.
    f. Adjustable arms.
4. Folding Table: Two, 36 inches by 72 inches.
5. Steel Folding Chairs: Ten.
6. Drafting Table: One, 3 feet by 6 feet.
7. Drafting Stool: One, swivel, with back support.
8. Wastepaper Basket: Three.
9. First-Aid Kit: One.
10. Tri-Class (ABC), Dry Chemical Fire Extinguisher, 10-Pound: One.
11. Telephone: Two, with one intercom line and two incoming/outgoing lines, Touch-Tone, with conference speaker, and 12-foot coiled handset cord.
12. Digital Answering Machine: AT&T, Model 1739 or equal.
13. Multifunction Printer, scanner, fax: Brother 7820N (or equivalent) with connecting cables.
14. Duplicator, 1 each, dry type, self-feeding, capable of providing 11-inch by 17-inch, 8-1/2-inch by 11-inch, and 8-1/2-inch by 14-inch copies and collating multiple copies to 10, and reduction and enlargement capabilities; include maintenance service agreement for duration of contract.
15. Dry Erase Whiteboard: One, 48 inches wide by 72 inches long.
16. Dry Erase Markers: Twelve, various colors with two erasers.

2.02 PROJECT SIGN

A. Provide and maintain two, 8-foot-wide by 4-foot-high sign constructed of 3/4-inch exterior high density overlaid plywood. Sign shall bear name of Project, Owner, Contractor, Engineer, and other participating agencies. Lettering shall be blue applied on white background by an experienced sign painter. Paint shall be exterior type enamel. Information to be included will be provided by Engineer.

PART 3 EXECUTION

3.01 OWNER AND ENGINEER'S FIELD OFFICE

A. Locate where directed by Engineer; level, block, tie down, skirt, provide stairways, and relocate when necessary and approved. Construct on proper foundations, and provide proper surface drainage and connections for utility services.

B. Provide minimum 100 square feet of gravel or crushed rock base, minimum depth of 4 inches, at each entrance.

C. Raise grade under field office, as necessary, to elevation adequate to avoid flooding.

D. Provide sanitary facilities in compliance with state and local health authorities.

E. Provide janitorial service on a weekly basis.

F. Exterior Door Keys: Furnish two sets of keys.

G. Telephone:

1. Provide number of incoming lines equal to that specified for telephone type.
2. Provide appropriate jacks; locate as directed by Engineer.
3. Provide wiring necessary for complete telephone system.

H. Telecommunications:

1. Provide broad band internet connection with minimum of five live portable computer (PC) ports.
2. Provide appropriate jacks, CAT-5 patch cords, wiring, and equipment required for a complete telecommunications system.

3. Arrange and provide for telecommunication service for use during construction. Pay costs of installation, maintenance, and monthly service of internet connection.

I. Maintain in good repair and appearance, and provide weekly cleaning service and replenishment, as required, of paper towels, paper cups, hand soap, toilet paper, first-aid kit supplies, and bottled water.

J. Replenish, as needed, facsimile paper, duplicator paper and toner, computer paper, and printer toner.

K. Set up and provide monthly electric, telephone and internet service to Engineer's trailer for the duration of the contract period. Telephone service shall include local and long distance.

3.02 TEMPORARY UTILITIES

A. Power:

1. No electric power is available at Site. Make arrangements to obtain and pay for electrical power used until final payment and acceptance by Engineer, unless otherwise recommended by Engineer at Substantial Completion.
2. Cost of electric power will be borne by Contractor.

B. Lighting: Provide temporary lighting to meet applicable safety requirements to allow erection, application, or installation of materials and equipment, and observation or inspection of the Work.

C. Water:

1. No construction or potable water is available at Site. Make arrangements for and bear costs of providing water required for construction purposes and for drinking by construction personnel during construction.
2. Hydrant Water:
   a. Contractor may obtain a permit from the Sheboygan Water Utility, 72 Park Avenue, Sheboygan, WI 53081, for using a City fire hydrant to obtain potable water, at Contractor's cost. The deposit for the equipment is $1,000 per hydrant meter assembly. The equipment included the meter, RPZ valve and HEIM valve and will be installed by Water Utility employees ONLY. From the deposit, $75.00 per hydrant meter assembly is non-refundable. There is also a $160.00 charge for each time that the equipment is installed and taken off. The water usage will also be deducted

from the deposit. If costs exceed the deposit, the Sheboygan Water Utility will bill the Contractor. Under no circumstance will the Contractor operate fire hydrants or tamper with Water Utility equipment. For scheduling purposes, the Contractor must notify Water Utility staff at 920-459-3814 twenty-four (24) hours before relocating the equipment to a different location.

b. Is available from nearby hydrants. Secure written permission for connection and use from water department and meet requirements for use. Notify fire department before obtaining water from fire hydrants.

c. Use only special hydrant-operating wrenches to open hydrants. Make certain hydrant valve is open full, since cracking valve causes damage to hydrant. Repair damaged hydrants and notify appropriate agency as quickly as possible. Hydrants shall be completely accessible to fire department at all times.

d. Include costs to connect and transport water to construction areas in Contract Price.

D. Sanitary and Personnel Facilities:

1. Provide and maintain facilities for Contractor's employees, Subcontractors, and other onsite employers' employees. Service, clean, and maintain facilities and enclosures.
2. Provide in accordance with State and Local Health Authorities: Sanitary facilities to include a portable hand-wash station.

E. Electric, Telephone and High Speed Internet Service: Contractor will arrange and provide onsite electric, telephone, and high speed internet service for Owner and Engineer use during construction. Contractor to pay costs of installation and removal and monthly bills until Contract closeout.

F. Fire Protection: Furnish and maintain on Site adequate firefighting equipment capable of extinguishing incipient fires. Comply with applicable parts of NFPA 241.

3.03 PROTECTION OF WORK AND PROPERTY

A. General:

1. Perform Work within right-of-way and easements in a systematic manner that minimizes inconvenience to property owners and the public.

2. Maintain in continuous service existing oil and gas pipelines, underground power, telephone or communication cable, water mains, irrigation lines, sewers, poles and overhead power, and other utilities encountered in Work area, unless other arrangements satisfactory to owners of said utilities have been made.
3. Where completion of the Work requires temporary or permanent removal or relocation of existing utility, coordinate activities with owner of said utility and perform work to their satisfaction.
4. Protect, shore, brace, support, and maintain underground pipes, conduits, drains, and other underground utility construction uncovered or otherwise affected by construction operations.
5. Keep fire hydrants and water control valves free from obstruction and available for use at all times.
6. In areas where Contractor's operations are adjacent to or near a utility, such as gas, telephone, television, electric power, water, sewer, or irrigation system, and such operations may cause damage or inconvenience, suspend operations until arrangements necessary for protection have been made by Contractor.
7. Notify property owners and utility offices that may be affected by construction operation at least 2 days in advance: Before exposing a utility, obtain utility owner's permission. Should service of utility be interrupted due to Contractor's operation, notify proper authority immediately. Cooperate with said authority in restoring service as promptly as possible and bear costs incurred.
8. Do not impair operation of existing sewer system. Prevent construction material, pavement, concrete, earth, volatile and corrosive wastes, and other debris from entering sewers, pump stations, or other sewer structures.
9. Maintain original Site drainage wherever possible.
10. Adhere to all requirements for managing waste piles and the operating water treatment system.

B. Comply with the terms and conditions of the Company's Access Agreements with the City of Sheboygan and with the City Redevelopment Authority, including, but not limited to:

1. Identification and implementation of measures to mitigate noise, odor, dust and other nuisances to the extent practicable given the nature and schedule of the Work.
2. Restoration of City property affected by the Work, including sidewalks, light poles, recreational trails, adjacent streets, and other City infrastructure to a condition at least as good as pre-construction condition.

C. Site Security:

1. Erect a temporary security (plastic orange safety) fence at locations shown on the Drawings.
2. 24-hour per day, 7 days per week site security shall patrol entire project area.

D. Barricades and Lights:

1. Provide as necessary to prevent unauthorized entry to construction areas and affected roads, streets, and alleyways, inside and outside of fenced area, and as required to ensure public safety and the safety of Contractor's employees, other employer's employees, and others who may be affected by the Work.
2. Provide to protect existing facilities and adjacent properties from potential damage.
3. Protect streets, roads, highways, and other public thoroughfares that are closed to traffic by effective barricades with acceptable warning signs.
4. Locate barricades at the nearest intersecting public thoroughfare on each side of blocked section.
5. Illuminate barricades and obstructions with warning lights from sunset to sunrise.

E. Existing Structures:

1. Where Contractor contemplates removal of small structures such as mailboxes, signposts, and culverts that interfere with Contractor's operations, obtain approval of property owner and Engineer.
2. Replace items removed in their original location and a condition equal to or better than original.

F. Archaeological Finds:

1. General: Should finds of an archaeological or paleontological nature be made within Site limits, immediately notify Owner and Engineer and proceed in accordance with General Conditions. Continue the Work in other areas without interruption.
2. Archaeological Finds: Evidence of human occupation or use of an area within contract limits.
3. Paleontological Finds: Evidence of prehistoric plant or animal life, such as skeletons, bones, fossils, or casts and other indications such as pictographs.
4. Owner may order the Work stopped in other areas if, in Owner's opinion, find is more extensive than may appear from uncovered material.

5. Protection of Finds:
    a. Cover, fence, or otherwise protect finds until notice to resume the Work is given.
    b. Cover finds with plastic film held in place by earth, rocks, or other weights placed outside the find. Should additional backfilling be necessary for safety or to prevent caving, place backfill material loosely over plastic film.
    c. Sheet or shore as necessary to protect excavations underway. Place temporary fence to prevent unauthorized access.
    d. Dewater finds made below water table as necessary to protect construction Work underway. Divert groundwater or surface runoff away from find by ditching or other acceptable means.
6. Removal of Finds:
    a. Finds are property of Owner. Do not remove or disturb finds without Owner's written authorization.
    b. Should Owner elect to have a find removed, provide equipment, labor, and material to permit safe removal of find without damage. Provide transportation for delivery to individuals, institutions, or other places as Owner may find desirable, expedient, or required by law.

3.04 TEMPORARY CONTROLS

A. Air Pollution Control:

1. Minimize air pollution from construction operations.
2. Burning of waste materials, rubbish, or other debris will not be permitted on or adjacent to Site.
3. Conduct operations of dumping rock and of carrying rock away in trucks to cause a minimum of dust. Give unpaved streets, roads, detours, or haul roads used in construction area a dust-preventive treatment or periodically water to prevent dust. Strictly adhere to applicable environmental regulations for dust prevention.
4. Provide and maintain temporary dust-tight partitions, bulkheads, or other protective devices during construction to permit normal operation of existing facilities. Construct partitions of plywood, insulating board, plastic sheets, or similar material. Construct partitions in such a manner that dust and dirt from demolition and cutting will not enter other parts of existing building or facilities. Remove temporary partitions as soon as need no longer exists.
5. Minimize dust from construction operations.
6. Comply with local dust control ordinances.
7. Implement mitigation methods and equipment outlined in Dust Control Plan.

B. Noise Control:

1. Comply with applicable portions of the City of Sheboygan Municipal Code, including by not limited to:
   a. Chapter 66, Article III – Noise: Activities that produce noise that will otherwise violate Chapter 66, Article III, are permitted by the Company's Access Agreement with the City between the hours of 7:00 AM to 7:00 PM, Monday through Friday.
2. Minimize noise from construction operations.
3. Comply with local noise control ordinances.
4. Implement mitigation methods and equipment outlined in Noise Control Plan.

C. Comply with applicable portions of the City of Sheboygan Municipal Code, including by not limited to:

1. Chapter 134 – Waterways, including, but not limited to:
   a. Restricting speed of watercraft to 4 miles per hour in accordance with Section 109.
   b. Providing at least one readily accessible, throwable, personal flotation device for each watercraft, in addition to at least one US Coast Guard-approved personal flotation device for each person on board, in accordance with Section 145.
   c. Providing at least one readily accessible fire extinguisher for each watercraft capable of promptly and effectively extinguishing burning fuel utilized by the watercraft, for which number, size, and type are prescribed by state law, in accordance with Section 146.

D. Water Pollution Control:

1. Prior to commencing excavation and construction, obtain Engineer's agreement with detailed plans showing procedures intended to handle and dispose of sewage, groundwater, and dewatering pump discharges.
2. Comply with Section 01 57 13, Temporary Erosion and Sedimentation Control, for stormwater flow and surface runoff.
3. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.
4. Water pollution control methods shall be in compliance with applicable permits.

5. Discharge of surface water that was in contact with contaminated soil, sediment or debris into the Sheboygan River will not be allowed without treatment and approval by Engineer.
6. Any permit violations will be immediately communicated from the Contractor to the Engineer for concurrence on whether such violation is reportable and whether a system shut-down is appropriate.

E. Erosion, Sediment, and Flood Control: Provide, maintain, and operate temporary facilities as specified in Section 01 57 13, Temporary Erosion and Sedimentation Control, to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period.

F. Diesel Emission Control Technology:

1. Diesel Onroad Vehicles: All diesel onroad vehicles used on the project for more than 10 total days must have either (1) engines that meet U.S. Environmental Protection Agency (EPA) 2007 onroad emissions standards or (2) emission control technology verified by EPA or the California Air Resources Board (CARB) to reduce PM emissions by a minimum of 85 percent.
2. Diesel Generators: Beginning January 1, 2010, all diesel generators on site for more than 10 total days must be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85 percent.
3. Diesel Nonroad Construction Equipment:
   a. Until December 31, 2012, all diesel nonroad construction equipment with engines 75hp and greater on site more than 10 total days must have either (1) engines that meet EPA Tier 4 nonroad emissions standards, or (2) emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 20 percent.
   b. Beginning January 1, 2013, all diesel nonroad construction equipment on site for more than 10 total days must have either (1) engines meeting EPA Tier 4 nonroad emission standards or (2) emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85 percent for engines 75 hp and greater and by a minimum of 20 percent for engines between 25 and 75 hp.
   c. Tier 0 engines are not allowed on site and must be upgraded to Tier 1 and then retrofit with an emission control device achieving the required reduction.

4. Upon confirming that the diesel vehicle, construction equipment, or generator has either a Tier 4 engine or pollution control technology installed and functioning, the developer will issue a compliance sticker indicating the level of emission control. All diesel vehicles, construction equipment, and generators on site shall display the compliance sticker in the designated location.
5. Pollution control technology shall be operated, maintained, and serviced as recommended by the manufacturer.
6. All diesel vehicles, construction equipment, and generators on site shall be fueled with ultra-low sulfur diesel fuel (ULSD) or a ULSD blend with sulfur content of 15 ppm or less.

G. Additional Diesel Requirements:

1. Construction shall not proceed until the Subcontractor submits a certified list of all diesel vehicles, construction equipment, and generators to be used on site. The list shall include the following:
   a. Contractor and subcontractor name and address, plus contact person responsible for the vehicles or equipment.
   b. Equipment type, manufacturer, engine model year, engine certification (Tier rating), horsepower, plate, serial number, and expected fuel usage and/or hours of operation.
   c. For the pollution control technology installed: Technology type, serial number, make, model, manufacturer, EPA/CARB verification number/level, and installation date.
2. If the Contractor subsequently needs to bring on site equipment not on the list, the Contractor shall submit written notification within 24 hours that attests the equipment complies with all contract conditions.
3. All diesel equipment shall comply with all pertinent local, state, and federal regulations relative to exhaust emission controls and safety.
4. The Contractor shall establish generator sites and truck-staging zones for vehicles waiting to load or unload material on site. Such zones shall be located where diesel emissions have the least impact on abutters, the general public, and especially sensitive receptors such as hospitals, schools, daycare facilities, elderly housing, and convalescent facilities.
5. During periods of inactivity, idling of diesel onroad vehicles and nonroad equipment shall be minimized and shall not exceed the time allowed under state and local laws. In the absence of state or local idling regulations, idling shall not exceed three minutes in any sixty-minute period.

H. Exemptions:

1. Onroad diesel vehicles, nonroad construction equipment, and generators on site for 10 working days or less over the life of the project need not install pollution control technology. This equipment must be included on the equipment list submitted by the Contractor and approved by the Engineer.
2. If the Contractor can prove to the Engineer's satisfaction that for a particular class of onroad diesel vehicle, nonroad construction equipment, or generator, (1) no alternative equipment with a Tier 4 engine is available, or (2) it is not technically feasible to meet the control level specified above, or (3) installing the control device would create a safety hazard or impaired visibility for the operator, then the Contractor may, with the Engineer's written approval, drop down to a lower level of control.
3. The Engineer may create an exemption when there is a compelling emergency need to use diesel vehicles or engines that do not meet the contract conditions for emission controls. An example would be the need for rescue vehicles or other equipment to prevent or remedy harm to human beings or nearby property. Meeting contract deadlines is not considered a compelling emergency.
4. Exemptions, if any, from state or local idling laws are specified by those laws, which shall be enforced on site. In locations without prevailing state or local idling regulations, idling for more than three minutes over a sixty-minute period is permitted only under the following circumstances:
    a. When an onroad diesel vehicle or nonroad construction equipment is forced to remain motionless because of traffic conditions or mechanical difficulties over which the operator has no control;
    b. To bring the onroad diesel vehicle, nonroad construction equipment, or generator to the manufacturer's recommended operating temperature;
    c. When there are regulations requiring temperature control for driver or passenger comfort and there are no auxiliary power sources available to provide temperature control;
    d. When it is necessary to operate auxiliary equipment that is located in or on the diesel vehicle or construction equipment, to accomplish the intended use of the vehicle or equipment (for example, cranes and cement mixers);
    e. When the onroad diesel vehicle, nonroad construction equipment, or generator is being repaired, if idling is necessary for such repair; and/or;

f. When the onroad diesel vehicle, nonroad construction equipment, or generator is queued for inspection, if idling is necessary for such inspection.

I. Reporting:

1. The Contractor shall submit to the developer's representative a monthly report that, for each onroad diesel vehicle, nonroad construction equipment, or generator, includes:
   a. Number of hours of engine operation.
   b. Any problems with the equipment or emission controls.
2. In addition, the monthly report shall contain certified copies of fuel deliveries for the time period that identify:
   a. Source of supply.
   b. Quantity of fuel.
   c. Quality of fuel, including sulfur content (percent by weight).

J. Compliance: All onroad diesel vehicles, nonroad construction equipment, and generators must be compliant with these provisions whenever they are present on the project site. The Contractor's compliance with this notice shall not be grounds for claims as outlined in the Contract General Terms and Conditions.

K. Non-Compliance:

1. If any onroad diesel vehicle, nonroad construction equipment, or generator is found to be in non-compliance with the contract terms, then Subcontractor shall make the necessary corrections to bring the equipment into compliance at no cost to the Engineer.
2. Once the Contractor has brought previously non-compliant machinery into compliance, the Engineer shall promptly issue the Contractor a written acknowledgment of compliance.

3.05 STORAGE YARDS AND BUILDINGS

A. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.

B. Temporary Storage Buildings:

1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.
2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
3. Store combustible materials (paints, solvents, fuels) in a well-ventilated and remote building meeting safety and environmental standards.

3.06 ACCESS ROADS

A. Construct access roads within easements, rights-of-way, or Project limits. Utilize existing roads where shown.

B. Maintain drainage ways. Install and maintain culverts to allow water to flow beneath access roads. Provide corrosion-resistant culvert pipe of adequate strength to resist construction loads.

C. Provide gravel, crushed rock, or other stabilization material to permit access by all motor vehicles at all times.

D. Maintain road grade and crown to eliminate potholes, rutting, and other irregularities that restrict access.

E. Coordinate with Engineer detours and other operations affecting traffic and access. Provide at least 72 hours' notice to Engineer of operations that will alter access to Site.

F. Upon completion of construction, restore ground surface disturbed by access road construction to original grade.

3.07 PARKING AREAS

A. Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations.

B. Provide parking facilities for personnel working on Project.

3.08 VEHICULAR TRAFFIC

A. Comply with Laws and Regulations regarding closing or restricting use of public streets or highways. No public or private road shall be closed, except by written permission of proper authority. Ensure the least possible obstruction to traffic and normal commercial pursuits.

B. Conduct the Work to interfere as little as possible with public travel, whether vehicular or pedestrian.

C. Whenever it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.

D. Road Closures: Maintain satisfactory means of exit for persons residing or having occasion to transact business along route of the Work. If it is necessary to close off roadway or alley providing sole vehicular access to property for periods greater than 2 hours, provide written notice to each owner so affected 3 days prior to such closure. In such cases, closings of up to 4 hours may be allowed. Closures of up to 10 hours may be allowed if a week's written notice is given and undue hardship does not result.

E. Maintenance of traffic is not required if Contractor obtains written permission from Owner and tenant of private property, or from authority having jurisdiction over public property involved, to obstruct traffic at designated point.

F. In making street crossings, do not block more than one-half the street at a time. Whenever possible, widen shoulder on opposite side to facilitate traffic flow. Provide temporary surfacing on shoulders as necessary.

G. Maintain top of backfilled trenches before they are paved, to allow normal vehicular traffic to pass over. Provide temporary access driveways where required. Cleanup operations shall follow immediately behind backfilling.

H. When flaggers and guards are required by regulation or when deemed necessary for safety, furnish them with approved orange wearing apparel and other regulation traffic control devices.

I. Provide snow removal to facilitate normal vehicular traffic on public or private roads affected by construction. Perform snow removal promptly and efficiently by means of suitable equipment whenever necessary for safety, and as may be directed by proper authority.

J. Notify fire department and police department before closing street or portion thereof. Notify said departments when streets are again passable for emergency vehicles. Do not block off emergency vehicle access to consecutive arterial crossings or dead-end streets, in excess of 300 linear feet, without written permission from fire department. Conduct operations with the least interference to fire equipment access, and at no time prevent such access. Furnish Contractor's night emergency telephone numbers to police department.

K. Temporary Bridges:

1. Construct temporary bridges at points where maintenance of traffic across pipeline construction is necessary.
2. Make bridges over public streets, roads, and highways acceptable to authority having jurisdiction thereover.

3. Bridges erected over private roads and driveways shall be adequate for service to which they will be subjected.
4. Provide substantial guardrails and suitably protected approaches.
5. Provide footbridges not less than 4 feet wide with handrails and uprights of dressed lumber.
6. Maintain bridges in place as long as conditions of the Work require their use for safety of public, except that when necessary for proper prosecution of the Work in immediate vicinity of bridge. Bridge may be relocated or temporarily removed for such period as Engineer may permit.

3.09 CLEANING DURING CONSTRUCTION

A. In accordance with General Conditions, as may be specified in other Specification sections, and as required herein.

B. Wet down exterior surfaces prior to sweeping to prevent blowing of dust and debris. At least weekly, sweep floors (basins, tunnels, platforms, walkways, roof surfaces), and pick up and dispose of debris.

C. Provide approved containers for collection and disposal of waste materials, debris, and rubbish. At least weekly, dispose of such waste materials, debris, and rubbish offsite.

D. At least weekly, brush sweep entry drive, roadways, and other streets and walkways affected by the Work and where adjacent to the Work.

3.10 FUEL STORAGE AND HANDLING

A. Store fuel according to local, state and federal laws.

B. At no time shall overtopping fuel tank or spillage to ground surface be allowed.

3.11 PROTECTION OF THE ENVIRONMENT

A. Minimize air pollution by use of properly operating combustion emission control devices on construction vehicles and equipment. Encourage shutdown of motorized equipment not in use.

B. All areas for handling and storage of fuels, oils and other potentially hazardous liquids shall have spill containment or release prevention measures. Such areas shall also have appropriate signage and labels. Maintenance of equipment on site shall be with prior approval of the Engineer.

C. All waste materials other than contaminated sediment and debris encountered during sediment removal, shall be recycled, hauled to a licensed solid waste landfill, or otherwise disposed of in an environmentally sound manner and in compliance with all applicable local, state and federal rules.

D. Hazardous waste, contaminated sediments, TSCA materials, and equipment processing such materials, if any, shall be stored, handled, transported, and disposed of in compliance with all applicable local, state and federal rules.

E. Other measures shall be taken, as necessary, to maintain work site in an environmentally sound matter.

F. All spills or leaks of fuels, oil, or other WDNR-reportable liquids resulting from handling or equipment malfunctions shall be reported immediately to the Company and Engineer. Affected soils shall be properly removed from limits of construction. Fuel spills in public waterways, or releases of NAPL during sediment excavation, shall be properly contained with containment booms and removed with appropriate absorbent materials, as necessary to minimize off-site discharge. All affected soils and other affected materials/debris shall be disposed in accordance with applicable local, state and federal rules as well, as the sole expense of the Contractor and as agreed by the Company and Engineer. A copy of the manifests, if necessary, shall be provide to Engineer within five working days of disposal. Company reserves right to order leaking equipment removed from site.

END OF SECTION

SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 WORK OF THIS SECTION

A. This section covers work necessary for stabilization of soil to prevent erosion during and after construction and land disturbing activities. The work shall include the furnishing of all labor, materials, tools, and equipment to perform the work and services necessary as herein specified and as indicated on the Drawings. This shall include installation, maintenance, and final removal of all temporary soil erosion and sediment control measures.

B. The minimum areas requiring soil erosion and sediment control measures are indicated on the Drawings. The right is reserved to modify the use, location, and quantities of soil erosion and sediment control measures based on activities of the Contractor and as the Engineer considers to be to the best interest of the Owner.

C. See additional information noted on the Drawings.

1.02 GENERAL

A. See Conditions of the Contract and Division 1, General Requirements, which contain information and requirements that apply to the Work specified herein and are mandatory for this project.

B. All activities shall conform to the Wisconsin Department of Natural Resources (WDNR) Construction Standards, the specifications, and the Drawings. In the event of a conflict, the more stringent requirement shall apply.

C. The sections of the Erosion and Sediment Control Standards referenced include, but are not limited to:

STANDARD	Number	Effective Date
Channel Erosion Mat [PDF 142KB]	1053	Aug-05
Ditch Checks [PDF 25KB]		
• Figure 1 [PDF 25KB]	1062	Mar-06
• Figure 2 [PDF 32KB]		

STANDARD	Number	Effective Date
Construction Site Diversion [PDF 20KB]	1066	Mar-06
Dust Control [PDF 125KB]	1068	Mar-04
Grading Practices for Erosion Control - Temporary [PDF 131KB]	1067	Mar-04
Interim Sediment Control: Water Application of Polymers [PDF 268KB]	1051	Nov-02
Land Application of Anionic Polyacrylamide [PDF 615KB]	1050	Jul-01
Mulching for Construction Sites [PDF 142KB]	1058	Jun-03
Non-channel Erosion Mat [PDF 165KB]	1052	Aug-03
Sediment Bale Barrier [PDF 136KB]	1055	Aug-03
Sediment Basin [PDF 91KB]	1064	Mar-06
Sediment Trap [PDF 193KB]	1063	Sep-05
Seeding [PDF 160KB]	1059	Nov-03
Silt Fence [PDF 37KB] • illustration [PDF 90KB] • illustration (DGN) [ZIP 79KB]	1056	Mar-06
Silt Curtain [ZIP 554KB]	1070	Sep-05
Stone Tracking Pad and Tire Washing [PDF 108KB]	1057	Aug-03
Storm Drain Inlet Protection For Construction Sites [PDF 379KB] • illustration [PDF 245KB] • illustration (DGN) [ZIP 298KB]	1060	Oct-03
Turbidity Barriers [PDF 1.4MB]	1069	Sep-05
Vegetative Buffer for Construction Sites [PDF 141KB]	1054	May-03

D. Soil erosion stabilization and sedimentation control consist of the following elements:

1. Maintenance of existing permanent or temporary storm drainage piping and channel systems, as necessary.
2. Construction of new permanent and temporary storm drainage piping and channel systems, as necessary.
3. Construction of temporary erosion control facilities such as silt fences, check dams, etc.
4. Topsoil and Seeding:
    a. Placement and maintenance of Temporary Seeding on all areas disturbed by construction.
    b. Placement of permanent topsoil, fertilizer, and seed, etc., in all areas not occupied by structures or pavement, unless shown otherwise.
5. Soil Stabilization Seeding: Placement of fertilizer and seed, etc., in areas as specified hereinafter.

E. The Contractor shall be responsible for phasing Work in areas allocated for his exclusive use during this Project, including any proposed stockpile areas, to restrict sediment transport. This will include installation of any temporary erosion control devices, ditches, or other facilities.

F. The areas set aside for the Contractor’s use during the Project may be temporarily developed to provide satisfactory working, staging, and administrative areas for his exclusive use. Preparation of these areas shall be in accordance with other requirements contained within these Specifications and shall be done in a manner to both control all sediment transport away from the area.

G. All permanent stockpiles shall be seeded with soil stabilization seed and protected by construction of silt fences and permanent 2-foot, minimum depth, ditches, completely surrounding stockpiles and located within 10 feet of the toes of the stockpile slopes.

H. Sediment transport and erosion from working stockpiles shall be controlled and restricted from moving beyond the immediate stockpile area by construction of temporary toe-of-slope ditches and accompanying silt fences, as necessary. The Contractor shall keep these temporary facilities in operational condition by regular cleaning, regrading, and maintenance. Stockpiles remaining in place longer than 14 calendar days shall be considered permanent stockpiles for purposes of erosion and sediment control.

I. The Contractor shall maintain all elements of the Soil Erosion Stabilization and Sedimentation Control systems and facilities to be constructed during this Project for the duration of his activities on this Project. Formal inspections made jointly by the Contractor and the Engineer shall be conducted every 2 weeks to evaluate the Contractor's conformance to the requirements of both these Specifications and WDNR Regulations.

J. All silt traps shall be cleaned of collected sediment after every rainfall or as determined from the biweekly inspections. Cleaning shall be done in a manner that will not direct the sediment into the storm drain piping system. Removed sediment shall be taken to an area selected by the Engineer where it can be cleaned of sticks and debris, then allowed to dry. Final sediment and debris disposal shall be onsite as designated by Engineer.

K. Replacement or repair of failed or overloaded silt fences, check dams, or other temporary erosion control devices shall be accomplished by the Contractor within 24 hours after receiving written notice from the Engineer.

L. Unpaved earth drainage ditches shall be regraded as needed to maintain original grade and remove sediment buildup. If a ditch becomes difficult to maintain, the Contractor shall cooperate with the Engineer and install additional erosion control devices such as check dams, temporary paving, or silt fences as directed by the Engineer.

M. If the Contractor has not complied with any of the above maintenance efforts to the satisfaction of the Engineer within 2 working days after receiving written notification from the Engineer, the Owner shall have the prerogative of engaging others to perform any needed maintenance or cleanup, including removal of accumulated sediment at constructed erosion control facilities, and deduct from the Contractor's monthly partial payment the costs for such efforts plus a $500 administration fee.

1.03 SUBMITTALS

A. Submittals shall be made in accordance with Section 01 33 00, Submittal Procedures.

B. Contractor shall submit the Soil Erosion and Sedimentation Control Plan (SESC) to the City of Sheboygan. A copy of the plan shall also be submitted to the Engineer.

C. In addition, the Contractor shall provide the following specific information:

1. Certificates of inspection of seed by state or federal authorities and copies of delivery invoices or other proof of quantities of fertilizer.

2. Manufacturer's certificate of compliance attesting that the geotextile meets the requirements of these Specifications.

PART 2 PRODUCTS

2.01 PERMANENT SEED

A. Seed for those areas where topsoil is to be applied shall be in accordance with WDNR Standard 1059.

2.02 SOIL STABILIZATION AND TEMPORARY SEED

A. Summer seed mix shall be in accordance with WDNR Standard 1059.

B. Winter seed mix shall be in accordance with WDNR Standard 1059.

2.03 FERTILIZER

A. Fertilizer shall be commercial, chemical type, uniform in composition, free-flowing, conforming to state and federal laws, and suitable for application with equipment designed for that purpose.

B. Fertilizer shall have a minimum percentage of plant food by weight for the following: Permanent fertilizer mix shall be 10 percent nitrogen, 10 percent phosphoric acid, and 10 percent potash.

2.04 LIME

A. Ground dolomitic limestone not less than 85 percent total carbonates and magnesium, ground so that 50 percent passes through a 100-mesh sieve and 90 percent passes a 20-mesh sieve. Coarser material will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing the 100-mesh sieve.

2.05 STRAW MULCH

A. Threshed straw of oats, wheat, barley, or rye, free from seed of noxious weeds, or clean salt hay.

PART 3 EXECUTION

3.01 GENERAL

A. The Contractor shall perform inspections as required by law or regulation, and as described in the SESC.

B. The Contractor shall install erosion and sediment control measures and maintain in accordance with the Drawings. The sequence of construction shown on the Drawings is made a part of these Contract Documents.

C. The Contractor shall provide and maintain Temporary Seeding at all times.

3.02 SUPER SILT FENCE

A. The Contractor shall construct silt fence in accordance with WDNR Standard 1059.

3.03 SEEDING

A. General:

1. The Contractor shall give at least 3 days notice to the Engineer prior to seeding to allow the Engineer to inspect the prepared areas. The Contractor shall rework any areas not approved for seeding to the Engineer's satisfaction.
2. The Contractor shall keep the Engineer advised of schedule of operations.
3. Seed shall be clean, delivered in original unopened packages and bearing an analysis of the contents, guaranteed 95 percent pure with minimum germination rate of 85 percent.

B. Schedules:

1. Seeding shall be performed in accordance with the following schedule:
   a. Summer Seeding: Between March 15 and June 15, or September 1 to November 15.
   b. Winter Seeding: All other times of year, except when weather conditions prohibit further construction operations as determined by the Engineer.

C. Soil Stabilization and Temporary Seeding:

1. Soil stabilization seeding shall consist of the application of the following materials in quantities as further described herein for stockpiles and disturbed areas left inactive for more than 14 days.
   a. Lime.
   b. Fertilizer.
   c. Seed.
   d. Mulch.
   e. Maintenance.

2. Hydroseeding will be permitted as an alternative method of applying seed and associated soil conditioning agents described above. Should the Engineer elect to apply soil stabilization seeding by hydroseeding methods, he shall submit his operational plan and methods to the Engineer.
3. Temporary Seeding is to be placed and maintained over all disturbed areas prior to Permanent Seeding. Maintain Temporary Seeding until such time as areas are approved for Permanent Seeding. As a minimum, maintenance shall include the following:
    a. Fix-up and reseeding of bare areas or redisturbed areas.
    b. Mowing for stands of grass or weeds exceeding 6 inches in height.

D. Topsoil and Permanent Seeding:

1. Topsoil and Permanent Seeding shall consist of the application of the following materials in quantities as further described herein:
    a. 4-inch depth of topsoil.
    b. Lime.
    c. Fertilizer.
    d. Permanent seed mix.
    e. Mulch.
2. Topsoil is to be placed over all disturbed areas that are not surfaced with concrete, asphalt, or pavers.
3. Preparation:
    a. After rough grading is completed and reviewed by the Engineer, Contractor shall spread topsoil as hereinbefore specified over all areas to receive Permanent Seeding to a minimum compacted depth of 6 inches with surface elevations as shown. Loosen the finished surface to a depth of 2 inches and leave in smooth condition, free from depressions or humps, ready for seeding.
    b. Finish Grading:
        1) Contractor shall rake the top-soiled area to a uniform grade, so that all areas drain as indicated on the grading plan.
        2) Contractor shall remove all trash and stones exceeding 1 inch in diameter from area to a depth of 2 inches.
4. Permanent Seed:
    a. After soil has been scarified, apply seed and other products at the rate and proportion specified below:
        1) Seed Mix: 150 pounds per acre.
        2) 10-10-10 Fertilizer: 1,000 pounds per acre.
        3) Lime: 3 tons per acre.
        4) Water: As necessary.

5. Maintenance:
   a. Maintenance Period: Contractor shall begin maintenance immediately after each portion of permanent grass is planted and continue for 8 weeks after all planting is completed.
   b. Maintenance Operations: Contractor shall water to keep surface soil moist. Repair washed out areas by filling with topsoil, liming, fertilizing, and seeding. Replace mulch on banks when washed or blown away. Mow to 2 inches after grass reaches 3 inches in height, and mow frequently enough to keep grass from exceeding 3-1/2 inches. Weed by local spot application of selective herbicide only after first planting season when grass is established.
6. Guarantee:
   a. If, at the end of the 8-week maintenance period, a satisfactory stand of grass has not been produced, the Contractor shall renovate and reseed the grass or unsatisfactory portions thereof immediately, or, if after October 15 during the next planting season. If a satisfactory stand of grass develops by July 1 of the following year, it will be accepted. If it is not accepted, a complete replanting will be required during the planting season meeting all of the requirements specified under paragraph Permanent Seed.
   b. A satisfactory stand is defined as grass or section of grass that has a substantial establishment of new grass, strongly rooted, and uniformly green in appearance from a distance of 50 feet. No noticeable thin or bare areas as determined by the Engineer.

END OF SECTION

SECTION 01 72 00
DECONTAMINATION OF PERSONNEL AND EQUIPMENT

PART 1 GENERAL

1.01 GENERAL

A. Onsite decontamination stations as shown on the drawings, large enough to accommodate the largest piece of construction equipment to be used at the site, shall be provided by the Contractor in conformance with this section the Contractor's Site Management Plan, and the Contractor's Site Health and Safety Plan. The Contractor will be responsible for providing the appropriate decontamination tools, equipment, solutions, liquids, containers, and supplies.

B. All water generated during decontamination activities shall be collected, contained, and transported to the Sediment Processing Area for treatment prior to discharge.

C. All personnel shall be decontaminated before leaving the site, as specified in the Contractor's Site Health and Safety Plan. "Leaving the site" is defined as leaving the exclusion area and entering the contamination reduction area. Decontamination shall be required prior to breaks, when picking up tools, equipment, or materials in the support zone, or any other activities where the potential exists for contaminant transfer.

D. Equipment shall be cleaned and decontaminated prior to use onsite, and prior to leaving the site.

E. Equipment used to remove and process TSCA sediment shall be decontaminated by processing an additional 25 cubic yards of material after it has been determined that TSCA material is no longer present, if approval of this variance from the TSCA regulations has been obtained prior to initiating work. If such approval has not been obtained, decontamination methods set forth in 40 CFR 761 shall be complied with.

F. All equipment shall be washed and cleaned under Level D requirements or as specified by the Site Safety Officer prior to initiation of work at the site.

G. All decontamination operations shall be conducted by Contractor personnel wearing Level D protective equipment and a face shield or additional protection as specified by the Site Safety Officer.

1.02 SUBMITTALS

A. Action Submittals: Contractor shall prepare and submit a decontamination station design for approval.

PART 2 PRODUCTS

2.01 GENERAL

A. The Contractor shall furnish all equipment and supplies necessary for the decontamination process such as clean water supply tank, trisodium phosphate detergent, a mobile steam cleaner or hot water high pressure washer, buckets, brushes, etc, as required.

B. The Contractor shall furnish sealable United States Department of Transportation (U.S. DOT)-approved containers (55-gallon drums) having watertight lids stored in a containment area as required, or poly tank for the storage of decontamination water.

C. Tanks or drums shall be stored in a lined containment area or on a containment pad.

D. The Contractor shall also supply labeling materials and appropriately label all containers.

PART 3 EXECUTION

3.01 GENERAL

A. The Contractor shall follow the general decontamination plans, as specified in the Contractor's Site Health and Safety Plan and Waste Management Plan. Prior to mobilization, the Contractor shall finalize all personnel decontamination needs, equipment, and procedures with the Engineer. A decontamination station, meeting specifications and equipped with a means of catching all water, shall be constructed by the Contractor at the locations shown on the drawings.

3.02 EQUIPMENT DECONTAMINATION

A. TSCA Decontamination:

1. At the direction of the Engineer that dredging at a TSCA area has been completed, the Contractor shall decontaminate the equipment after use in a TSCA area and prior to the resumption of processing any non-TSCA material thru the handling systems in the following manner:

a. The Contractor shall continue to dredge as shown on the Drawings.
b. The 25 cubic yards of non-TSCA sediment dredged immediately after completion of a TSCA area shall be considered TSCA sediment.
c. The Contractor shall process, manage and dispose of the 25 additional cubic yards of non-TSCA sediment as TSCA material.
d. Processing, managing and disposal of the 25 additional cubic yards of non-TSCA sediment as TSCA sediment using the same equipment used for TSCA sediment equipment shall constitute decontamination.
e. Any spillage on and/or around equipment and grounds shall be cleaned up and processed as TSCA sediment.

B. General Decontamination:

1. The Contractor shall decontaminate the equipment after use and trucks hauling sediment offsite for disposal in the following manner:
   a. Scrape and remove all earthen materials from the equipment.
   b. Hose down equipment with a portable high-pressure, hot-water washer (steam cleaner).
   c. Collect rinsate and scrapings. Place rinsate in approved tanks or drums, if needed, and transport to the Sediment Processing Area for treatment prior to discharge.
   d. Scrapings shall be stored on-site and covered until it can be disposed of at an approved offsite disposal facility.
   e. Contractor is responsible for management and treatment of all decontamination water and discharge to the Sheboygan River in accordance with the WPDES permit.
   f. Contractor is responsible for management of all scrapings and disposal at an approved offsite disposal facility.

C. Following equipment decontamination, the dewatering pads will be washed off.

D. On the completion of the Work the Contractor shall remove the temporary access roadways and the dewatering pads:

1. The impervious surface of the access roadways or dewatering pad will be washed off and will be tested for total PCBs by the Contractor. If results are below the standard of 1 mg/kg total PCBs as described in 40 Code of Federal Regulations (CFR) 761, it will be broken up, removed, and either reused or disposed offsite at a nearby Resource Conservation and Recovery Act (RCRA) Subtitle D landfill.

2. The base material for the access roads or dewatering pad, as well as the materials comprising the temporary site access roads, will be tested for total PCBs by the Contractor, and will be allowed for reuse if results are below the standard of 1 mg/kg total PCBs as described in 40 Code of Federal Regulations (CFR) 761.

E. Media utilized in water treatment shall be sampled and characterized for disposal at an Owner-approved offsite disposal facility by the Contractor.

F. Other potentially reusable materials such as the temporary site access roadways, and sub-layers for the asphalt pad shall be sampled by the Contractor to verify they have not been contaminated during remedial activities. Once analytical results verify they are not contaminated, the Dredging Contractor shall remove these materials from the site.

G. Contact Engineer for inspection and approval of intermediate and final clean-ups of equipment and transfer and disposal sites.

3.03 PERSONNEL DECONTAMINATION

A. Personnel decontamination procedures to be used shall be performed prior to leaving the excavation location. The Contractor shall provide all protective clothing and the equipment necessary for its own personnel to comply with the decontamination procedures as specified in the Contractor's Site Health and Safety Plan.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Submit prior to application for final payment.
   a. Record Documents: As required in General Conditions.
   b. Approved Shop Drawings and Samples: As required in the General Conditions.
   c. Special bonds, Special Guarantees, and Service Agreements.
   d. Consent of Surety to Final Payment: As required in General Conditions.
   e. Releases or Waivers of Liens and Claims: As required in General Conditions.
   f. Releases from Agreements.
   g. Final Application for Payment: Submit in accordance with procedures and requirements stated in Section 01 29 00, Payment Procedures.
   h. Extra Materials: As required by individual Specification sections.

1.02 RECORD DOCUMENTS

A. Quality Assurance:

1. Furnish qualified and experienced person, whose duty and responsibility shall be to maintain record documents.
2. Accuracy of Records:
   a. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
   b. Purpose of Project record documents is to document factual information regarding aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive Site measurement, investigation, and examination.
3. Make entries within 24 hours after receipt of information that a change in the Work has occurred.

4. Prior to submitting each request for progress payment, request Owner's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a deferral by Owner to recommend whole or any part of Contractor's Application for Payment, either partial or final.

1.03 RELEASES FROM AGREEMENTS

A. Furnish Owner written releases from property owners or public agencies where side agreements or special easements have been made, or where Contractor's operations have not been kept within the Owner's construction right-of-way.

B. In the event Contractor is unable to secure written releases:

1. Inform Owner of the reasons.
2. Owner or its representatives will examine the Site, and Owner will direct Contractor to complete the Work that may be necessary to satisfy terms of the side agreement or special easement.
3. Should Contractor refuse to perform this Work, Owner reserves right to have it done by separate contract and deduct cost of same from Contract Price, or require Contractor to furnish a satisfactory bond in a sum to cover legal Claims for damages.
4. When Owner is satisfied that the Work has been completed in agreement with Contract Documents and terms of side agreement or special easement, right is reserved to waive requirement for written release if: (i) Contractor's failure to obtain such statement is due to grantor's refusal to sign, and this refusal is not based upon any legitimate Claims that Contractor has failed to fulfill terms of side agreement or special easement, or (ii) Contractor is unable to contact or has had undue hardship in contacting grantor.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 MAINTENANCE OF RECORD DOCUMENTS

A. General:

1. Promptly following commencement of Contract Times, secure from Engineer at no cost to Contractor, one complete set of Contract Documents.
2. Label or stamp each record document with title, "RECORD DOCUMENTS," in neat large printed letters.

3. Record information concurrently with construction progress and within 24 hours after receipt of information that change has occurred. Do not cover or conceal Work until required information is recorded.

B. Preservation:

1. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
2. Make documents and Samples available at all times for observation by Engineer.

C. Making Entries on Drawings:

1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe change by graphic line and note as required.
   a. Color Coding:
      1) Green when showing information deleted from Drawings.
      2) Red when showing information added to Drawings.
      3) Blue and circled in blue to show notes.
2. Date entries.
3. Call attention to entry by “cloud” drawn around area or areas affected.
4. Legibly mark to record actual changes made during construction, including, but not limited to:
   a. Depths of various elements of foundation in relation to finished first floor data if not shown or where depth differs from that shown.
   b. Horizontal and vertical locations of existing and new Underground Facilities and appurtenances, and other underground structures, equipment, or Work. Reference to at least two measurements to permanent surface improvements.
   c. Location of internal utilities and appurtenances concealed in the construction referenced to visible and accessible features of the structure.
   d. Locate existing facilities, piping, equipment, and items critical to the interface between existing physical conditions or construction and new construction.
   e. Changes made by Addenda and Field Orders, Work Change Directive, Change Order, and Engineer’s written interpretation and clarification using consistent symbols for each and showing appropriate document tracking number.

5. Dimensions on Schematic Layouts: Show on record drawings, by dimension, the centerline of each run of items such as are described in previous subparagraph above.
    a. Clearly identify the item by accurate note such as “cast iron drain,” “galv. water,” and the like.
    b. Show, by symbol or note, vertical location of item (“under slab,” “in ceiling plenum,” “exposed,” and the like).
    c. Make identification so descriptive that it may be related reliably to Specifications.

3.02 FINAL CLEANING

A. At completion of the Work or of a part thereof and immediately prior to Contractor’s request for certificate of Substantial Completion; or if no certificate is issued, immediately prior to Contractor’s notice of completion, clean entire Site or parts thereof, as applicable.

1. Leave the Work and adjacent areas affected in a cleaned condition satisfactory to Owner and Engineer.
2. Remove grease, dirt, dust, paint or plaster splatter, stains, labels, fingerprints, and other foreign materials from exposed surfaces.
3. Repair, patch, and touch up marred surfaces to specified finish and match adjacent surfaces.
4. Broom clean exterior paved driveways and parking areas.
5. Hose clean sidewalks, loading areas, and others contiguous with principal structures.
6. Rake clean all other surfaces.
7. Remove snow and ice from access to buildings.
8. Leave water courses, gutters, and ditches open and clean.

B. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.

END OF SECTION

SECTION 02 20 30
DEBRIS MANAGEMENT

PART 1 GENERAL

1.01 DESCRIPTION OF WORK

A. Work covered by this section includes furnishing supervision, labor, equipment, materials, and performing operations necessary to:

1. Segregate Oversized Debris from sediment during dredging and offloading of sediment;
2. Temporarily stockpile and clean Oversized Debris as necessary;
3. Segregate debris from TSCA areas and manage in accordance with regulator approvals or 40 CFR 761.
4. Load-out and haul Oversized Debris from the Project Area; and
5. Dispose/recycle Oversized Debris at an appropriate disposal/recycle facility.

1.02 SUBMITTALS

A. Action: A Debris Management Plan shall be developed and submitted for review and approval. Procedures and equipment to be employed for separating, collecting, transporting, assessing, decontaminating and disposal of debris shall be described.

B. Informational:

1. Identify the proposed disposal (landfill) and/or recycling facility the Contractor intends to haul and dispose/recycle non-conforming debris, for approval by the Engineer and Owner. Contractor shall perform, and provide documentation of waste profiling necessary for disposal facility acceptance.
2. Submit for documentation load/weight tickets for disposal/recycle of non-conforming debris.

1.03 OVERSIZED DEBRIS

A. Oversized debris is defined in Section 01 02 00, Project Summary.

1.04 RETRIEVAL AND SEGREGATION EQUIPMENT

A. Contractor shall provide a grapple, rake, or other equipment designed to remove Oversized Debris from within the dredge prism that is too large to be removed by the dredge bucket.

B. The sediment barge or unloading dock/receiving facility at the Campmarina and WINSA sites shall be equipped with a 24-inch screen or other equipment designed to remove similar-sized Oversized Debris from the dredged materials prior to processing and placement.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 DEBRIS MANAGEMENT

A. Contractor shall segregate Oversized Debris from sediment at the Dredging Project Area and/or at the Campmarina and WINSA sites. Contractor may temporarily stockpile Oversized Debris at the Dredging Project Area on a barge or within the Sediment Processing Areas at the Campmarina and WINSA sites.

B. Upon receiving notification of TSCA regulator approval of this approach, Contractor shall clean Oversized Debris as necessary so that the surfaces are generally free of visual sediment or other obvious contamination in conformance with disposal and transportation requirements. Contractor's debris cleaning efforts will be dictated by the requirements of the disposal/recycling facility(s) accepting the various debris waste streams that may be generated. Contractor shall coordinate the Work to accommodate the debris cleaning requirements for each facility.

C. Contractor shall protect cleaned debris from becoming re-contaminated by coming in contact with impacted sediment or other contamination. In the event the surface of cleaned debris becomes re-contaminated, it shall be re-cleaned in accordance with this section of the Specifications.

D. Wash water generated while cleaning debris, equipment, or other contaminated materials shall be managed in accordance with local, state and federal requirements or treated onsite using the Contractor's water treatment system.

END OF SECTION

SECTION 02 30 20
RESIDUALS MANAGEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Residuals Management Layer Materials.
2. Residuals Management Layer Materials Handling.
3. Residuals Management Layer Materials Placement.

1.02 SUBMITTALS

A. Action: Submit a Residuals Management Layer Materials Placement Plan.

B. Informational: Results of gradation analyses for Sand.

C. Post placement confirmation results.

1.03 QUALITY CONTROL

A. Prepare Residuals Management Layer Materials Placement Plan to include:

1. Materials source.
2. Materials gradation.
3. Materials hauling route.
4. Materials stockpile area.
5. Materials conveyance equipment and procedure.
6. Procedures to control resuspension and turbidity during placement.

PART 2 PRODUCTS

2.01 GRADATION OF MATERIALS

A. Sand: The sand shall meet the following specific gradation requirements:

U.S. Sieve	3/8"	#4	#8	#16	#30	#50	#100	LBW
Metric Sieve	9.5mm	4.75mm	2.36mm	1.18mm	600µm	300µm	150µm	
Specification (Percent Passing by Weight)	100	95-100	65-95	35-75	20-55	10-30	0-10	1.0

2.02 SOURCE QUALITY ASSURANCE

A. Sand: Contractor to provide one representative gradation test (ASTM D2487) per 1,000 cubic yards from sand source prior to delivery of the sand to the Site. The Contractor shall also perform chemical analyses of sand material according to the local, state, or federal permit requirements to certify that the material meets requirements prior to placement of the sand cover. Sampling and analysis methods will be according to the guidelines in the Quality Assurance Project Plan (QAPP).

B. The results of the required chemical analyses and associated QA data must be provided to the Owner at least 48 hours prior to use of the material.

C. No cover material may be hauled or placed without approval of the material by Owner.

PART 3 EXECUTION

3.01 MATERIAL PLACEMENT TOLERANCES

A. Sand:

1. Dust control shall be implemented during the sand cover placement to reduce the particulate emissions.
2. A 6-inch to 12-inch thick sand cover shall be placed at areas as determined by confirmation sampling and cover placement decision logic. The accepted tolerance level for the sand cover shall be 1-inch less than the target thickness. Following sand placement, coring will be performed by the Owner to confirm the thickness of the sand placement is within specified tolerances.
3. The measurements will be required to document the thickness of the cover layer placed in each dredge area.
4. After the sand cover placement in an area, the cover material shall be measured for payment by the weighted bucket measurement technique. This measurement technique will consist of placing 5-gallon or similar buckets on the bottom of the area to receive sand (buckets will be weighted so they sink through the water column). After placement of the sand, the bucket will be retrieved using a rope or cable to verify the thickness of material placed. The usage of push cores is an acceptable alternate technique to verify the sand cover thickness for payment.
5. There will be no maximum thickness tolerance level constraints as the Dredging Contractor shall be reimbursed on a lateral area basis as long as the minimum thickness is met.

6. Place sand in such a manner to minimize re-suspension of sediments and to minimize turbidity caused by the sand placement.
7. Oversight shall be provided by Engineer during the sand cover placement.

B. Contractor will not be reimbursed for placement of materials beyond tolerances shown on the Drawings.

END OF SECTION

SECTION 02 30 50
DREDGED MATERIAL TRANSPORT AND DISPOSAL

PART 1 GENERAL

1.01 DESCRIPTION

A. Work covered by this section includes furnishing supervision, labor, materials, and equipment required to complete general or miscellaneous Project Area earth work, construction of offloading platforms, construction and operation of the sediment processing areas, treatment and discharge of decant water, sediment transport, disposal of dredged sediment at an approved landfill(s) including, but not limited to the following tasks:

1. Construction of Campmarina and WINSA Sediment Processing Areas.
2. Transporting dredged material from the Dredging Project Area to the Campmarina and WINSA sites.
3. Constructing and operating an unloading dock/receiving facility at the Campmarina and WINSA sites.
4. Characterization and disposal of dredged material at an approved landfill(s).

B. Related Work:

1. Management of encountered debris per Section 02 20 30, Debris Management.
2. Dredging per Section 35 20 25.23, Mechanical Environmental Dredging.
3. Performance of air and noise monitoring in accordance with Contractor's HASP.
4. Performance of Erosion and Sediment Control measures in accordance with Section 01 57 13, Temporary Erosion and Sediment Control. Performance of sediment resuspension monitoring and control per Section 02 40 00, Sediment Resuspension Control.
5. Performance of Water Treatment System monitoring in accordance with the WPDES permit.
6. Bathymetric surveys in the vicinity of the Offloading Platform at the Campmarina and WINSA sites per Section 35 20 25.23, Mechanical Environmental Dredging.
7. Restoration of Campmarina and WINSA sites per Section 31 01 00, Site Management and Construction Sequencing.

1.02 SUBMITTALS

A. Action:

1. Contractor shall submit to Engineer for approval, Contractor's plan for the Sediment Processing Area at the Campmarina and WINSA sites as part of the Dredging and Operations Plan per Section 35 20 25.23, Mechanical Environmental Dredging.
2. Contractor shall submit to Engineer for approval, Contractor's plan for platform construction and offloading sediment at the Campmarina and WINSA sites as part of the Dredging and Operations Plan per Section 35 20 25.23, Mechanical Environmental Dredging.
3. Contractor shall submit to Engineer for approval, trucking routes for transportation of impacted sediment from the Dredging Project Area to the approved landfill(s).

1.03 JOB CONDITIONS

A. Sediment Processing Area; Campmarina Site:

1. General: The Contractor shall construct temporary access roads as needed for Contractor's operations. A conceptual design of the access roads is shown on the Drawings.
2. Sediment Processing Area:
   a. The Contractor shall construct an impervious sediment processing area including run-on and runoff control for sediment handling and materials staging. A conceptual design is shown on the Drawings. The Contractor shall design the layout of the processing area, access roadways, sediment offloading area, mooring structure, and other facilities as necessary for Contractor's operations.
   b. Sediment piles must be covered during rain events. Measures must be taken to avoid having precipitation contact sediment waste piles. Storage standards in 40 CFR 761 are applicable to the TSCA sediment piles.
   c. The impervious surface shall be constructed with a geomembrane underneath it as shown on the Drawings in areas designated for the handling of TSCA sediment.
   d. The impervious surface shall be constructed with curbing to prevent runoff.
   e. The impervious surface shall be constructed with watertight sumps to collect the water from the sediment processing area.
   f. Sediment processing site shall be restored to NRT's prior condition.

3. Offloading Platform:
    a. Contractor shall design and construct the offloading platform.
    b. Offloading platform shall include drip pan structure to capture any sediment that falls from offloading bucket.
    c. Contractor shall restore protected geosynthetics, if damaged, down to EL. 582. Weld, sew, or tie new geosynthetics, as necessary. Refer to NRT document, Appendix A "*Focused NAPL and Sediment Removal Action Campmarina MGP River OU*" dated April 6, 2011 for as-built information.

B. Sediment Processing Area; WINSA Site:

1. General: The Contractor shall construct temporary access roads as needed for Contractor's operations. A conceptual design of the access roads is shown on the Drawings.
2. Sediment Processing Area:
    a. The Contractor shall construct an impervious sediment processing area for sediment handling and materials staging. A conceptual design is shown on the Drawings. The Contractor shall design the layout of the processing area, access roadways, sediment offloading area, mooring structure, and other facilities as necessary for Contractor's operations.
    b. Sediment piles must be covered during rain events. Measures must be taken to avoid having precipitation contact sediment waste piles. Storage standards in 40 CFR 761 are applicable to the TSCA sediment piles.
    c. The impervious surface shall be constructed with a geomembrane underneath it as shown on the Drawings in areas designated for the handling of TSCA sediment.
    d. The impervious surface shall be constructed with curbing to prevent runoff.
    e. The impervious surface shall be constructed with watertight sumps to collect the water from the sediment processing area.
    f. Sediment processing area shall be restored to condition existing at start of project.

C. The material dredged from the Dredging Project Area shall be offloaded at the Campmarina and WINSA sites as shown on the Drawings.

D. Offloading Platform:

1. Contractor shall design and construct the offloading platform.
2. Offloading platform shall include drip pan structure to capture any sediment that falls from offloading bucket.

E. Offloading Requirements:

1. Hours of Operation: Work operations are 24 hours per day, 6 days per week, unless otherwise specified.
2. Dredge material transfer will occur at the Offloading Platform.
3. Pre- and Post-offloading bathymetric surveys in the vicinity of the Offloading Platform at the Campmarina and WINSA sites will be required per Section 35 20 25.23, Mechanical Environmental Dredging.
4. Contractor will be responsible for removing spillage after offloading is completed per Section 35 20 25.23, Mechanical Environmental Dredging.
5. Contractor shall manage excess water that is generated in the processing area as a result of sediment consolidation and offloading.
6. Oversized Debris can be staged at the Campmarina and WINSA sites per Section 02 20 30, Debris Management, but must be disposed of at an approved offsite landfill.
7. Contractor will be responsible for transportation of the dredge material from the Offloading Platform to the processing area.
8. Pumping of decant water from the sediment barge to the water treatment system will be allowed.
9. Air monitoring for and noise as required by Contractor's HASP will be required.

F. Contractor shall comply with the provisions for vessels lying in the Harbor in accordance with the Sheboygan Code of Ordinances and USCG regulations. Specifically Contractor's vessels shall not be left unattended, shall be lit at night, shall be fastened when not in transport, and shall not obstruct other vessel passage.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 WASTE CHARACTERIZATION

A. Contractor shall subcontract a State of Wisconsin certified analytical laboratory to conduct testing of the processed sediment for waste characterization as required by the approved landfill(s).

3.02 EXAMINATION

A. Contractor shall examine the area and conditions of the off-loading area for disposal of Sheboygan River sediment.

3.03 PREPARATION

A. Contractor shall protect structures, utilities, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by barge unloading operations.

B. Contractor shall adhere to the following special requirements for work at the Campmarina site:

1. Take all precautions required to maintain the integrity and structural stability of the temporary sheet pile cofferdam and Waterloo barrier. In addition, precautions shall be taken to maintain integrity of the existing railing, sidewalks, and other City of Sheboygan improvements in the Work Area.
2. Limit ground pressure in the area bounded by the existing, upland, subsurface Waterloo barrier and containing the geosynthetic cover to 4 pounds per square inch (psi).
3. Repair or replace railing, retaining walls, other park features, geosynthetic cover, and Waterloo Barrier following incurred damage.

3.04 SEDIMENT UNLOADING

A. Off-loading facilities shall be capable of supporting all construction and transportation vehicles handling the dredged material.

B. Contractor shall perform dredged material unloading in a controlled and organized manner utilizing means and methods to minimize the loss of sediment to the vicinity of the Offloading Platform during unloading operations.

C. Contractor shall be responsible for the recovery of lost dredged material in the vicinity of the Offloading Platform. The bathymetric survey performed prior to receipt of impacted sediment from the Dredging Project Area will be the basis of determination for sediment accumulation in the vicinity of the Offloading Platform.

D. Any minor material spillage during the off-loading operation shall be cleaned up at the end of each work day and disposed of with the dredged material in the disposal area. Any major material spillage shall be cleaned up immediately. Notify Owner and Engineer immediately of any major material spillage. No material shall re-enter the waterway.

E. Material shall be off-loaded in a manner that precludes any material spillage. Drip aprons shall encompass the entire transfer area.

F. Dewatering, wash, or other water generated from the management of impacted dredged material at processing areas shall be pumped to the Contractor's water treatment system.

G. Any barges containing sediment at the end of the day, or if work ceases due to weather, shall be entirely covered in a manner that prevents precipitation from entering the barge or from or contacting any contaminated sediment.

3.05 SEDIMENT PROCESSING AREAS

A. Contractor shall create and manage separate load out piles for TSCA and non-TSCA sediment and take necessary precautions to prevent commingling of TSCA and non-TSCA sediment. A third load out pile shall be created and managed for material deemed suitable, as directed by Engineer, for transportation and unloading at the Sheboygan County Airport.

B. In the event of precipitation, Contractor shall take necessary steps to minimize run-on toward sediment piles and runoff from sediment load out piles.

C. Contractor shall protect TSCA load out piles from contacting precipitation and stormwater run-on. Stormwater runoff in TSCA processing areas will be directed to the nearest sump, so that flow through the non-TSCA sediment load out piles is avoided.

3.06 FIELD QUALITY CONTROL

A. Contractor shall utilize equipment, materials, and procedures which are anticipated to meet the quality requirements specified.

3.07 MAINTENANCE

A. Contractor shall repair and re-establish grades to pre-existing conditions as directed by Engineer along shoreline areas that resulted directly from Contractor's operations on the Offloading Platforms.

3.08 DISPOSAL

A. Contractor shall transport sediment for disposal at the approved landfill(s) or the Sheboygan County Airport site in accordance with the approved Dredging and Operations Plan.

B. Trucks shall be loaded with sediment so that the total weight of the truck and sediment does not exceed local, state, or federal weight restrictions.

END OF SECTION

SECTION 02 40 00
SEDIMENT RESUSPENSION CONTROL

PART 1 GENERAL

1.01 DESCRIPTION

A. Work covered under this Section includes providing materials, equipment, labor, and performing operations necessary to:

1. Develop a correlation between total suspended solids (TSS) as analyzed by laboratory and nephelometric turbidity units (NTUs) as measured real-time by instruments.
2. Provide and maintain sediment resuspension controls to comply with the resuspension performance standards for the dredge area.
3. Provide and maintain other sediment resuspension controls to comply with permit requirements at the Offloading Platforms at the Campmarina and WINSA sites.

B. Related Work:

1. Dredging per Section 35 20 25.23, Mechanical Environmental Dredging.
2. Dredged material transport and disposal per Section 02 30 50, Dredged Material Transport and Disposal.

1.02 REFERENCES

A. USACE, 2005. Silt Curtains as a Dredging Project Management Practice. ERDC TN-DOER-E21, September 2005.

1.03 SUBMITTALS

A. Informational:

1. Contractor shall provide to Engineer operational water quality data generated by Contractor during performance of the work.
2. Engineer shall provide to Contractor operational water quality data generated by Engineer during performance of the work.

1.04 RESUSPENSION PERFORMANCE MONITORING STANDARDS

A. At the start of the project, Contractor shall be responsible for developing a correlation between TSS as analyzed by laboratory and NTUs as measured real-time by instruments.

B. Turbidity, as an indicator of total suspended solids (TSS), will be the parameter of interest for resuspension performance monitoring. The action level for the dredge area is a 35 NTU increase above background and a 70 NTU increase above background for stop work condition. Sustained turbidity above the action level for 30 minutes will constitute an exceedance of the action level.

1.05 PERFORMANCE MONITORING STATIONS

A. The planned locations of performance monitoring stations will be located: 1) Downstream side of the 8th Street Bridge; and 2) 100 feet upstream of the upstream limit to the Dredge Area. The monitoring stations record turbidity within the river and will be operated and maintained by Contractor.

1.06 SEDIMENT RESUSPENSION CONTROL

A. Approved sediment resuspension control measures shall be implemented to meet resuspension performance monitoring standards. Best Management Practices (BMPs) should be implemented to minimize resuspension during dredging operations.

B. An example of a sediment resuspension control measure is an air bubble curtain. Another example is a silt curtain. If necessary, silt curtains may be deployed within the dredge area to reduce the transport of sediment into and out of the dredge area. If silt curtains are deployed, they shall be deployed to a depth in the river channel to allow mudflow beneath the silt curtain and meet resuspension standards for the dredge area. USACE (2005) suggests that extra curtain width (10 to 20 percent) may be necessary to accommodate deflection from current flow. The exact location for the deployment of silt curtains will be at the discretion of Contractor, if used as the sediment resuspension control measure.

C. Sediment resuspension control measures shall not extend across the full width of the river until the WDNR has indicated the Spring fish run is complete in the Sheboygan River

D. Deployment of silt curtains and/or other resuspension control measures that are anchored to shore will require permission from the property owner, with assistance from the WDNR and cooperation between the property owner and Contractor. Contingency resuspension control measures and an oil boom will be stored on site, for emergency use in the event of resuspension control measures failure, visible sheen, or exceedance of resuspension performance standards. Dredging operations will not be allowed if resuspension control measures are not in place.

E. The type and configuration of resuspension control measures used during dredging and offloading operations shall be defined in Contractor's Dredging and Operations Plan and be able to meet the resuspension performance standards for the dredge area and permit requirements. Within Contractor's Dredging and Operations Plan, contingency measures will be included that describe how the resuspension control measures will be managed during low, average, and high flow conditions and what contingency measures will be implemented in the event resuspension performance standards are not met. The USACE Dredging Operations and Environmental Research (DOER) Program - Silt Curtains as a Dredging Project Management Practice - ERDC TN-DOER-E21 (USACE, 2005), recommends that silt curtains shall only be deployed when river flow velocities are below 1.5 knots (2.5 ft/s). This velocity is deemed the maximum velocity at which the use of silt curtains is considered effective.

PART 2 PRODUCTS

2.01 RESUSPENSION CONTROL MEASURES IN DREDGE AREA

A. Per Part 1.06, resuspension control measures of sufficient size and quantity, suitable for use in the Dredging Project Area and Offloading Platform at the Campmarina and WINSA sites shall be available as a contingency in the event sediment resuspension controls fail to meet performance standards.

2.02 OIL BOOMS

A. Per Part 1.06, oil booms of sufficient size and quantity, suitable for use in the Dredging Project Area and Offloading Platform at the Campmarina and WINSA sites shall be available as a contingency measure for maintaining environmental quality. The booms shall be stored in such a manner that they may be deployed on a moment's notice.

PART 3 EXECUTION

3.01 CORRELATION DEVELOPMENT

A. For 5 consecutive days after in water dredging activities start, Contractor shall simultaneously measure real-time in-water turbidity and collect water samples and have them analyzed for TSS in order to develop a correlation between the two parameters. The paired turbidity meter monitoring reading and the water sample collected for laboratory analysis shall be collected at 10 locations each day, the first location upstream of the dredge to represent background, the second location close to the dredge, and the remainder at locations at intervals 100 feet downstream of the proceeding location, so the furthest downstream location is 800 feet downstream from the dredge.

B. Contractor shall use a statistical analysis to develop the correlation.

C. Contractor shall provide all data collected as part of this correlation development to Owner and Engineer.

3.02 MONITORING

A. Engineer will monitor the water quality data at the 8th Street Bridge monitoring stations at or near the dredge area that will be used to assess the effectiveness of Contractor's sediment resuspension controls.

B. Data from the upstream and downstream monitoring stations will be used to evaluate the water quality with respect to the performance monitoring standard.

C. Engineer will notify Contractor if water quality criteria have been exceeded.

D. All Contractor water quality monitoring data shall be provided to Owner and Engineer.

3.03 EVALUATION OF EXCEEDANCE

A. If turbidity readings from the performance monitoring location downstream of the project area indicate an increase of 35 NTU increase above background and a 70 NTU increase above background for stop work condition above the upstream performance monitoring location, additional monitoring will be performed to assess the BMPs.

B. Additional monitoring shall include turbidity measurement grab samples between the dredge area and the downstream monitoring location to determine the cause of the increase in turbidity.

C. If the increase was caused from non-dredging activities, the dredging will continue.

D. If the turbidity was elevated due to the dredging activities, Contractor shall re-assess the effectiveness of the BMPs and take corrective measures to mitigate the exceedance of resuspension performance standards.

E. If Engineer determines that dredging and/or construction activities are responsible for the exceedance of the resuspension standards during dredging, work will stop until Contractor can demonstrate that corrective measures have been taken and turbidity levels are below the resuspension performance standards.

3.04 CORRECTIVE MEASURES

A. Corrective measures proposed by Contractor shall be reviewed by Engineer prior to implementation.

3.05 OPERATION

A. Sediment resuspension controls and contingency measures shall be in place per Part 1.06.

B. Sediment resuspension controls and contingency measures shall not alter the regular flow through the river channel that could result in erosion of sea walls/embankments, scour of river bed, scour of bridge abutments, or other deteriorating effect on structures or facilities in the vicinity of the Dredging Project Area or the Offloading Platform at the Campmarina and WINSA sites.

3.06 SILT CURTAINS

A. Silt curtains will be used for dredging that is conducted before the Spring fish run is complete, generally around May 15. The WDNR will determine when the fish run is over.

B. During dredging activities, if the water quality exceedances are a pervasive problem, the Contractor may be required to revise operations to include silt curtains, as directed by Owner.

C. During dredging of the TSCA sediment, dredge areas shall be enclosed by Contractor with a silt curtain/boom system in order to minimize turbidity.

D. Silt curtains shall be kept out of navigational channel at all times and shall be monitored for failures.

E. Contractor shall maintain the silt curtain/boom systems and associated markings/lighting in good and effective operating condition by performing daily inspections to determine condition and effectiveness, by repairing resuspension control materials, and by other protective measures.

3.07 AIR BUBBLE CURTAIN

A. Air bubble curtains may be used for dredging that is conducted before the Spring fish run is complete, generally around May 15. The WDNR will determine when the fish run is over.

B. During dredging activities, if the water quality exceedances are a pervasive problem, the Contractor may be required to revise operations to include silt curtains or other measures to meet water quality requirements, as directed by USEPA.

C. Contractor shall maintain the air bubble systems and associated markings/lighting in good and effective operating condition by performing daily inspections to determine condition and effectiveness, by repairing resuspension control materials, and by other protective measures.

END OF SECTION

SECTION 31 01 00
SITE MANAGEMENT AND CONSTRUCTION SEQUENCING

PART 1 GENERAL

1.01 SUMMARY

A. This section describes the work involved in the site management and sequencing of construction at the site.

1.02 DEFINITIONS

A. Project Limits: Areas, as shown or specified, within which Work is to be performed.

B. Interfering of Objectionable Material: Trash, rubbish, and junk; vegetation and other organic matter, whether alive, dead, or decaying; topsoil.

C. Contaminated Solids: All sediment and debris at the site should be treated as contaminated.

D. Stormwater: Water produced from precipitation events that does not come in contact with Contaminated Solids.

E. Contaminated Stormwater: Water produced from precipitation events that has come in contact with Contaminated Solids at the site.

F. Project Limits: Areas, as shown or specified, within which Work is to be performed.

1.03 ACTION SUBMITTALS

A. Construction Sequencing Plan. Develop a construction sequencing plan that reflects the following:

1. Site Preparation.
    a. Office Trailer Area.
    b. Sediment Processing Areas, including pre-construction soil sampling and analytical testing.
    c. Equipment Launching.
2. Sediment Excavation.
    a. Surveys.
    b. Equipment.
    c. Sequence.
    d. TSCA.

e. Non-TSCA.
f. Airport.

3. Staging, Decon, and Disposal.
4. Restoration.
5. Demobilization, including post-construction soil sampling and analytical testing at the Sediment Processing Areas.

B. Develop a Site Management Plan to include, but not be limited to:

1. Temporary controls for preventing and minimizing air pollution.
2. Waste Management and Disposal including storage, decontamination, transportation, and disposal (TSCA and Non-TSCA solids).
3. Compliance with WDNR Chapter 30 and NR216 site specific permits.
4. Compliance with WDNR WPDES permit, Corps of Engineers permit (equivalent, but not the same as WDNR Chapter 30), as well as compliance with county and city stormwater ordinances.
5. Compliance with the procedures outlined in the emergency action requirements outlined in the project's Site Management Plan.
6. Stormwater Pollution Prevention Plan.
7. Soil Erosion and Sedimentation Control Plan.
8. Water Treatment Plan.

1.04 REGULATIONS

A. Comply with all applicable federal, state, and local site-specific permit requirements.

B. Contractor shall have copies of the applicable federal, state, and local site-specific permits onsite.

C. Contractor shall calendar-based tracking system onsite for permit compliance activities.

D. If conditions outside the scope of these specifications are encountered, all federal, state and local requirements shall apply. Notify the Owner and the Engineer immediately if conditions outside the scope of these specifications are encountered.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 MOBILIZATION

A. Mobilization shall include, but not be limited to, these principal items:

1. Mobilization of equipment and personnel.
2. Construction of staging areas.
3. Construction of sediment processing areas and pads.
4. Construction of sediment offloading areas.
5. Construction of Water Treatment System.
6. Documentation of Pre-construction conditions.
7. Surveys.

3.02 ANALYTICAL LABORATORY SUPPORT

A. Contractor shall subcontract a State of Wisconsin certified analytical laboratory to conduct testing of:

1. The water treatment system discharge in accordance with the WPDES permit.
2. Pre- and post-construction soil sampling of the Campmarina and WINSA sites.
3. Post-construction sampling of the TSCA concrete per the 40 CFR 761.69 unless modified by the MOU.
4. Waste characterization for offsite disposal.

3.03 STORAGE YARDS AND BUILDINGS

A. Temporary Storage Yards: Construct temporary storage yards for storage of products that are not subject to damage by weather conditions.

B. Temporary Storage Buildings:

1. Provide environmental control systems that meet recommendations of manufacturers of equipment and materials stored.
2. Arrange or partition to provide security of contents and ready access for inspection and inventory.
3. Store combustible materials (paints, solvents, fuels) in a well-ventilated and remote building meeting safety standards.

3.04 FLAMMABLE AND COMBUSTIBLE LIQUIDS

A. Storage of all flammable and combustible liquids shall meet all applicable Laws and Regulations, including 29 CFR 1926.152.

B. The use of burning at the Site for the disposal of refuse and debris will not be permitted.

3.05 WELDING, CUTTING AND BRAZING

A. Any welding, cutting and brazing work and storage of equipment shall meet all applicable Laws and Regulations, including 29 CFR 1910 Subpart Q.

3.06 HANDLING AND DISPOSAL OF WASTE (SOLIDS)

A. Excavated Sediment:

1. General demolition debris and unsalvageable material shall be disposed of at an approved offsite disposal facility.
2. Hazardous wastes including TSCA wastes, and contaminated materials shall be disposed of in accordance with applicable regulations and as specified in the Contractor's Site Management Plan.
3. Dispose of material upon approval from the Engineer.

3.07 HANDLING AND DISPOSAL OF CONTAMINATED WATER

A. Contaminated water including that captured from decontamination processes shall be pumped to the onsite temporary water treatment system and discharged in accordance with the WPDES permit into the Sheboygan River.

3.08 PERIMETER FENCE

A. Install fence as perimeter fence as shown on the Drawings.

B. Repair fencing as necessary to maintain security.

3.09 RESTORATION

A. Campmarina Site:

1. Contractor shall restore Campmarina site to original preconstruction condition as agreed upon in the access agreements between the City of Sheboygan, City Redevelopment Authority, and Owner.
2. Contractor shall include the following items not completed by others in Contractor's restoration work and comply with all provisions of access agreements between Owner and the City of Sheboygan and City Redevelopment Authority:
   a. Restoration of site entrances including the Wisconsin Avenue parking access and the 10th Street truck access entrances. To include sidewalk and curb cut restoration.

b. Re-grading, topsoil placement, and seeding, to be performed in areas within the Contractor's work area.
c. Repair or replacement of park features, if originally present prior to WPSC Emergency Response Action, to be performed in areas within the Contractor's work area:
    1) Asphalt and concrete sidewalks.
    2) Light poles, foundations, and wiring (e.g., replace entire foundation and geosynthetic collar where one light pole foundation was removed).
    3) Park benches.
    4) Playground equipment.
    5) Sand volleyball court and net.
    6) Water fountain.
    7) Bike racks.
    8) Fencing.
    9) Trees.
    10) Landscape stones.
    11) Groundwater monitoring wells.

B. WINSA Site: Contractor shall restore WINSA site to original preconstruction condition at the time of access agreement between WINSA and Contractor.

END OF SECTION

SECTION 32 91 13
SOIL PREPARATION

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
   a. C33/C33M, Standard Specification for Concrete Aggregates.
   b. C602, Standard Specification for Agricultural Liming Materials.
2. U.S. Bureau of Reclamation (USBR):
   a. 514.4.4, Reclamation Instructions, Series 510-Land Classification Techniques and Standards, Part 514-Laboratory Procedures, Chapter 4-Particle Size Analysis.
   b. 514.8.7, Reclamation Instructions, Series 510-Land Classification Techniques and Standards, Part 514-Laboratory Procedures, Chapter 8-Soil Chemical Tests.

1.02 SUBMITTALS

A. Shop Drawings: Product Labels/Data Sheets.

B. Samples: Representative of stockpile or imported topsoil.

C. Quality Control Submittals:

1. Certified Topsoil Analysis Reports:
   a. Indicate quantities of materials necessary to bring imported topsoil into compliance with textural/gradation requirements.
   b. Indicate quantity of lime, quantity and analysis of fertilizer, and quantity and type of soil additive.

1.03 SEQUENCING AND SCHEDULING

A. Rough grade areas to be planted or seeded prior to performing Work specified under this section.

PART 2 PRODUCTS

2.01 TOPSOIL

A. Topsoil removed during site preparation activities and stockpiled at location on the Drawings.

B. General: Natural, friable, sandy loam, obtained from well-drained areas, free from objects larger than 1-1/2 inches maximum dimension, and free of subsoil, roots, grass, other foreign matter, hazardous or toxic substances, and deleterious material that may be harmful to plant growth or may hinder grading, planting, or maintenance.

C. Composition: As determined in accordance with USBR 514.44:

1. Gravel-Sized Fraction: Maximum 5 percent by weight retained on a No. 10 sieve.
2. Sand-Sized Fraction: Maximum 65 percent passing No. 10 sieve and retained on No. 270 sieve.
3. Silt and Clay-Sized Fraction: Maximum 50 percent passing No. 270 sieve and larger than .002 millimeter.
4. Clay-Sized Fraction: Maximum 25 percent smaller than .002 millimeter.

D. Organic Matter: Minimum 1.5 percent by dry weight as determined in accordance with USBR 514.8.7.

E. pH: Range 6.0 to 7.2.

F. Textural Amendments: Amend as necessary to conform to required composition by incorporating sand, peat, manure, or sawdust.

G. Source: Stockpile material onsite, in accordance with Section 32 91 13, Soil Preparation. Import topsoil if onsite material is insufficient in quantity.

2.02 LIME

A. Composition: Ground limestone with not less than 85 percent total carbonates, ASTM C602.

B. Gradation:

1. Minimum 50 percent passing No. 100 sieve.
2. Minimum 90 percent passing No. 20 sieve.
3. Coarser material acceptable provided rates of application are increased proportionately on basis of quantities passing No. 100 sieve.

2.03 SOIL ADDITIVES

A. Sawdust or Ground Bark:

1. Nontoxic, of uniform texture, and subject to slow decomposition when mixed with soil.

2. Nitrogen-treated, or if untreated mix with minimum 0.15 pound of ammonium nitrate or 0.25 pound of ammonium sulfate per cubic foot of loose material.

B. Peat:

1. Composition: Natural residue formed by decomposition of reeds, sedges, or mosses in a freshwater environment, free from lumps, roots, and stones.
   a. Organic Matter: Not less than 90 percent on a dry weight basis as determined by USBR 514.8.7.
   b. Moisture Content: Maximum 65 percent by weight at time of delivery.

C. Fertilizer:

1. Natural:
   a. Manure:
      1) Well-rotted, stable or cattle manure, free from weed seed and refuse.
      2) Maximum 50 percent sawdust or shavings by volume.
      3) Age: Minimum 4 months; maximum 2 years.

D. Sand: Fine Aggregate: Clean, coarse, well-graded, ASTM C33/C33M.

2.04 SOURCE QUALITY CONTROL

A. Topsoil Analysis/Testing: Performed by county or state soil testing service or approved certified independent testing laboratory.

PART 3 EXECUTION

3.01 SUBGRADE PREPARATION

A. Apply lime, if pH is determined low, to subgrade before tilling.

B. Scarify subgrade to minimum depth of 6 inches where topsoil is to be placed.

C. Remove stones over 2-1/2 inches in any dimension, sticks, roots, rubbish, and other extraneous material.

D. Limit preparation to areas which will receive topsoil within 2 days after preparation.

3.02 TOPSOIL PLACEMENT

A. Do not place topsoil when subsoil or topsoil is frozen, excessively wet, or otherwise detrimental to the Work.

B. Mix soil amendments, lime, and other soil additives, identified in analysis reports with topsoil before placement or spread on topsoil surface and mix thoroughly into entire depth of topsoil before planting or seeding. Delay mixing of fertilizer if planting or seeding will not occur within 3 days.

C. Uniformly distribute to within 1/2 inch of final grades. Fine grade topsoil eliminating rough or low areas and maintaining levels, profiles, and contours of subgrade.

D. Remove stones exceeding 1-1/2-inch diameter, roots, sticks, debris, and foreign matter during and after topsoil placement.

E. Remove surplus subsoil and topsoil from Site. Grade stockpile area as necessary and place in condition acceptable for planting or seeding.

END OF SECTION

SECTION 32 92 00
TURF AND GRASSES

PART 1 GENERAL

1.01 DEFINITIONS

A. Maintenance Period: Begin maintenance immediately after each area is planted (seed, sod, or sprig) and continue for a period of 8 weeks after all planting under this section is completed.

B. Satisfactory Stand: Grass or section of 10,000 square feet or larger that has:

1. No bare spots larger than 1 square foot.
2. Not more than 10 percent of total area with bare spots larger than 1 square foot.
3. Not more than 15 percent of total area with bare spots larger than 6 square inches.

C. Standard Specifications: Wisconsin Department of Transportation Standard Specifications, 2011.

1.02 SUBMITTALS

A. Shop Drawings: Product labels/data sheets.

B. Quality Control:

1. Seed: Certification of seed analysis, germination rate, and inoculation:
   a. Certify that each lot of seed has been tested by a testing laboratory certified in seed testing, within 6 months of date of delivery. Include with certification:
      1) Name and address of laboratory.
      2) Date of test.
      3) Lot number for each seed specified.
      4) Test Results: (i) name, (ii) percentages of purity and of germination, and (iii) weed content for each kind of seed furnished.
   b. Mixtures: Proportions of each kind of seed.
2. Seed Inoculant Certification: Bacteria prepared specifically for legume species to be inoculated.

C. Contract Closeout Submittals: Description of required maintenance activities and activity frequency.

1.03 DELIVERY, STORAGE, AND PROTECTION

A. Seed:

1. Furnish in standard containers with seed name, lot number, net weight, percentages of purity, germination, and hard seed and maximum weed seed content, clearly marked for each container of seed.
2. Keep dry during storage.

B. Hydroseeding Mulch: Mark package of wood fiber mulch to show air dry weight.

1.04 WEATHER RESTRICTIONS

A. Perform Work under favorable weather and soil moisture conditions as determined by accepted local practice.

1.05 SEQUENCING AND SCHEDULING

A. Complete Work under this section within 10 days following completion of soil preparation.

B. Notify Engineer at least 3 days in advance of:

1. Each material delivery.
2. Start of planting activity.

C. Planting Season: Those times of year that are normal for such Work as determined by accepted local practice.

1.06 MAINTENANCE SERVICE

A. Contractor: Perform maintenance operations during maintenance period to include:

1. Watering: Keep surface moist.
2. Washouts: Repair by filling with topsoil, liming, fertilizing, seeding, and mulching.
3. Mowing: Mow to 2 inches after grass height reaches 3 inches, and mow to maintain grass height from exceeding 3-1/2 inches.
4. Fence: Repair and maintain until satisfactory stand of grass is established.
5. Reseed unsatisfactory areas or portions thereof immediately at the end of the maintenance period if a satisfactory stand has not been produced.

6. Reseed/replant during next planting season if scheduled end of maintenance period falls after September 15.
7. Reseed/replant entire area if satisfactory stand does not develop by July 1 of the following year.

PART 2 PRODUCTS

2.01 FERTILIZER

A. Commercial, uniform in composition, free-flowing, suitable for application with equipment designed for that purpose. Minimum percentage of plant food by weight.

B. Application Rates: Determined by soil analysis results.

C. Mix:

1. Nitrogen: 10.
2. Phosphoric Acid: 10.
3. Potash: 10.

2.02 SEED

A. Fresh, clean new-crop seed that complies with the tolerance for purity and germination established by Official Seed Analysts of North America.

B. Seed shall comply with the requirements of Section 630 of the WisDOT Standard Specifications.

C. WisDOT Seed Mix No. 40: Proportion by weight as below.

Species	**Percent Germination**	**Percent Mixture**
Kentucky Bluegrass	85	35
Red Fescue	85	20
Hard Fescue	85	20
Improved Fine Perennial Ryegrass	85	25
	Total	**100**

2.03 WATER

A. Any water used to moisten surface soils or in hydro-seeding operations shall be from a potable source or a source approved by the Engineer.

2.04 HYDROSEEDING MULCH

A. Wood Cellulose Fiber Mulch:

1. Specially processed wood fiber containing no growth or germination inhibiting factors.
2. Dyed a suitable color to facilitate inspection of material placement.
3. Manufactured such that after addition and agitation in slurry tanks with water, the material fibers will become uniformly suspended to form homogenous slurry.
4. When hydraulically sprayed on ground, material will allow absorption and percolation of moisture.

PART 3 EXECUTION

3.01 PREPARATION

A. Grade areas to smooth, even surface with loose, uniformly fine texture.

1. Roll and rake, remove ridges, fill depressions to meet finish grades.
2. Limit such Work to areas to be planted within immediate future.
3. Remove debris, and stones larger than 1-1/2-inch diameter, and other objects that may interfere with planting and maintenance operations.

B. Moisten prepared areas before planting if soil is dry. Water thoroughly and allow surface to dry off before seeding. Do not create muddy soil.

C. Restore prepared areas to specified condition if eroded or otherwise disturbed after preparation and before planting.

3.02 FERTILIZER

A. As described in Section T-901 of the WisDOT Standard Specifications.

3.03 SEEDING

A. As described in Section T-901 of the WisDOT Standard Specifications.

B. Hydroseeding:

1. Application Rate: Based on manufacturer’s recommendations.

2. Apply on moist soil, only after free surface water has drained away.
3. Prevent drift and displacement of mixture into other areas.
4. Upon application, allow absorption and percolation of moisture into ground.
5. Mixtures: Seed and fertilizer may be mixed together, apply within 30 minutes of mixing to prevent fertilizer from burning seed.

3.04 FIELD QUALITY CONTROL

A. Eight (8) weeks after seeding is complete and on written notice from Contractor, Engineer will, within 15 days of receipt, determine if a satisfactory stand has been established.

B. If a satisfactory stand has not been established, Engineer will make another determination after written notice from Contractor following the next growing season.

END OF SECTION

SECTION 33 47 13.01
POND AND RESERVOIR LINERS—HDPE

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
   a. A193/A193M, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure Service, and other Special Purpose Applications.
   b. A194/A194M, Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service, or both.
   c. A276, Standard Specification for Stainless and Steel Bars and Shapes.
   d. B211, Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.
   e. C881/C881M, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
   f. D570, Standard Test Method for Water Absorption of Plastics.
   g. D638, Standard Test Method for Tensile Properties of Plastics.
   h. D696, Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between Minus 30 Degrees C and 30 Degrees C with Vitreous Silica Dilatometer.
   i. D746, Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
   j. D751, Standard Test Methods for Coated Fabrics.
   k. D792, Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
   l. D882, Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
   m. D1004, Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting.
   n. D1505, Standard Test Method for Density of Plastics by the Density-Gradient Technique.
   o. D1693, Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics.

p. D2240, Standard Test Method for Rubber Property-Durometer Harness.
q. D4833, Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
r. D5199, Standard Test Method for Measuring Nominal Thickness of Geosynthetics.
s. D5321, Standard Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method.
t. D5641, Standard Practice for Geomembrane Seam Evaluation by Vacuum Chamber.
u. D5994, Standard Test Method for Measuring Core Thickness of Textured Geomembrane.
v. D6392, Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods.

1.02 DEFINITIONS

A. Boot: Watertight collar fabricated from geomembrane sheet for sealing geomembrane to pipes and other objects that penetrate geomembrane.

B. Film Tearing Bond: Failure in ductile mode of one bonded sheet, by testing, prior to complete separation of bonded area.

C. Geomembrane: Essentially impermeable geosynthetic composed of one or more layers of polyolefin materials fusion bonded into single-ply integral sheet.

D. Panel: Piece of geomembrane composed of two or more sheets seamed together.

E. Sheet: Seamless piece of geomembrane.

F. Watertight: Geomembrane installation free of flaws and defects that will allow passage of water and gases, liquids, and solids to be contained under anticipated service conditions.

1.03 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:
   a. Manufacturer’s specifications, literature for each geomembrane furnished, and products used to complete installation.

b. Compensation allowance calculation and numerical values for temperature induced geomembrane expansion and contraction.
c. Polymer Resin: Product identification and Supplier.
d. Geomembrane sheet layout with proposed size, number, position, and sequence of sheet placement, and location of field seams.
e. Proposed equipment for material placement.
f. Procedures for material installation.

B. Informational Submittals:

1. Qualifications:
   a. Manufacturer.
   b. Installer.
   c. Independent testing agency.
2. Quality Assurance Program: Written description of geomembrane manufacturer's and installer's formal programs for manufacturing, fabricating, handling, installing, seaming, testing, and repairing geomembrane.
3. Production dates for geomembrane.
4. Testing:
   a. Factory QC test results for supplied geomembrane.
   b. Rough-surfaced geomembrane coefficient of interface friction test results.
   c. Certified Field seam test results.
   d. Laboratory Testing Equipment: Certified calibrations, manufacturer's product data, and test procedures.
5. Geomembrane Installer's Certification of Subsurface Acceptability: Form attached at end of this section.
6. Special guarantee.

1.04 QUALIFICATIONS

A. Independent Testing Agency: Minimum 5 years' experience in field of geomembrane testing. Laboratory shall maintain calibrated instruments, equipment, and documented standard procedures for performing specified testing.

B. Manufacturer: Successfully manufactured a minimum of 10 million square feet of each type of geomembrane material specified.

C. Installer: Successfully installed a minimum of 1 million square feet and 10 projects of each type of geomembrane product specified in applications similar to the Project. Installer shall be the manufacturer, approved manufacturer installer, or Contractor approved by the Engineer to install the geomembrane.

D. Minimum qualifications stated above will be deemed met if the firm or cumulative experience of key personnel (supervisors and trained installation/testing technicians) proposed for this Project has minimum experience specified. If key personnel provision is used to qualify the firm, submit letter stating key personnel meet the minimum experience requirements and those individuals are available for and will be committed to this Project.

1.05 COORDINATION MEETINGS

A. A geomembrane preconstruction meeting shall be held at the site prior to installation of the geomembrane.

B. Attendees (at a Minimum):

1. Contractor’s designated quality control representative.
2. Engineer.
3. Representatives of geomembrane installer.
4. Others requested by Engineer.

C. Topics:

1. Specifications and Drawings.
2. Submittal requirements and procedures.
3. Schedule for beginning and completing geomembrane installation.
4. Training for installation personnel.
5. Installation crew size.
6. Establishing geomembrane marking system, to include sheet identification, defects, and satisfactory repairs, to be used throughout Work.
7. Lines of authority and communication.
8. Health and safety.
9. Temperature and weather limitations.

D. Seam Installation and Testing Demonstration: Performed by geomembrane installer, for each type of seam required.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Geomembrane:

1. Individually package each sheet and protect from damage during shipment.
2. Mark each package with identification of material type, size, and weight.

B. Epoxy Adhesive:

1. Storage Temperature:
   a. Control temperature above 60 degrees F and dispose of cartridges if shelf life has expired.
   b. If stored at temperatures below 60 degrees F, test adhesive prior to use to determine if adhesive meets specified requirements.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not install geomembrane or perform seaming under the following conditions, unless it can be demonstrated to satisfaction of Engineer that performance requirements can be met under these conditions:

1. Air temperature is less than 35 degrees F or more than 85 degrees F.
2. Relative humidity is more than 90 percent.
3. Raining, snowing, frost is in ground, in the presence of standing water, or wind is excessive.

B. Do not place granular materials on geomembrane when ambient temperature is less than 35 degrees F, unless it can be demonstrated to satisfaction of Engineer that materials can be placed without damage.

1.08 SEQUENCING AND SCHEDULING

A. Factory test results for supplied geomembrane materials shall be acceptable to Engineer prior to shipment of geomembrane.

1.09 SPECIAL GUARANTEE

A. Provide manufacturer's extended guarantee or warranty, with USEPA named as beneficiary, in writing, as special guarantee. Special guarantee shall provide for correction, or at option of USEPA, removal and replacement of Work specified in this Specification section found defective during periods below, commencing on date of Substantial Completion. Duties and obligations for correction or removal and replacement of defective Work as specified in General Conditions.

1. Guaranty geomembrane against manufacturing defects, deterioration due to ozone, ultraviolet, and other exposure to elements for period of 20 years on pro rata basis.
2. Guaranty geomembrane against defects in material and factory seams for period of 2 years commencing with the Date of Final Acceptance.
3. Guaranty geomembrane against defects resulting from installation for period of 2 years commencing with the Date of Final Acceptance.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Geomembrane:

1. GSE Lining Technology, Inc., Houston, TX.
2. Poly-Flex, Inc., Grand Prairie, TX.
3. AGRU America, Georgetown, SC.

2.02 GEOMEMBRANE

A. Composition: High density polyethylene (HDPE) containing no plasticizers, fillers, extenders, reclaimed polymers, or chemical additives, except following:

1. Approximately 2 percent by weight of carbon black to resin for ultraviolet resistance.
2. Antioxidants and heat stabilizers, not to exceed 1.5 percent total by weight, may be added as required for manufacturing.

B. Furnish in rolled single-ply continuous sheets with no factory seams.

C. Sheet Thickness: 60 mils.

D. Sheet Width: Minimum 15 feet.

E. Roll Length: Longest that will be manageable and reduce field seams.

F. Manufactured with rough textured sides (both sides). Manufactured so that surface irregularities that produce specified friction are adequately fused into sheet or are extruded with sheet, on both sides of sheet. Texture is to be in addition to base thickness specified for sheet.

G. Meet manufacturer's most recent published specifications and required minimum HDPE geomembrane values in this table.

Minimum Physical Properties for HDPE Geomembrane		
Property	**Required Value**	**Test Method**
Specific Gravity	0.940 to 0.936, g/cc; not more than 15% greater than base resin density	ASTM D792, Method A-1 or ASTM D1505
Rough-Surfaced, HDPE Minimum Properties, Each Direction		
Thickness, min., for thinner areas of textured sheet	57 mil	ASTM D5199, Modified Note 2, or ASTM D5994
Tensile Stress at Yield	2 lb/mil thickness	ASTM D638
Elongation at Yield	12% plus or minus 3%	
Puncture Resistance	1 lb/mil thickness	ASTM D4833
Tear Resistance	0.70 lb/mil thickness	ASTM D1004, Die C
Brittleness Temperature	Minus 70º F, no cracks	ASTM D746 (Proc. B)
Coefficient of Linear Thermal Expansion	1.2 x 10^{-4} in/in/degree C	ASTM D696
Environmental Stress Crack	300 hours	ASTM D5397
Bonded Seam Strength in Shear	2 lb/in-width/mil thickness, min. & FTB	ASTM D 6392
Bonded Seam Strength in Peel	1.2 lb/in-width/mil thickness, min. & FTB	ASTM D6392
Water Absorption, Weight Change/Adap.	0.085% max.	ASTM D570

Minimum Physical Properties for HDPE Geomembrane		
Property	**Required Value**	**Test Method**
Notes: 1. Commercially available micrometers may be used that have a 60-degree taper to a point with a radius of 1/32 inch. Contractor shall make enough measurements of thinner areas of textured sheet to develop statistical basis for thickness.		

H. Extrudate for Fusion Welding of HDPE Geomembranes: Formulated from the same resin as geomembrane and shall meet applicable physical property requirements.

2.03 SEALANT CAULKING

A. Two-component sealant formulated of 100 percent polyurethane elastomer, such as Elastuff 120 Mastic as supplied by United Paint and Coatings, Greenacre, WA.

B. Butyl rubber sealant such as Butylgrip Sealant, supplied by the Biddle Company, St. Louis, MO.

PART 3 EXECUTION

3.01 PREPARATION

A. Geomembrane Inspection: During unwrapping visually inspect and mark each imperfection for repair.

B. Do not place geomembrane until condition of subgrade or geosynthetics installed is acceptable to Engineer.

3.02 WELDING UNITS

A. Single or double hot-wedge fusion seam welding.

B. Extrusion welding systems.

C. Hot-air welding is not acceptable.

3.03 GEOMEMBRANE INSTALLATION

A. Do not install geomembrane or seam unless Contractor can demonstrate successful performance and test results showing seams meet strength specifications.

B. Protection:

1. Do not use geomembrane surfaces as work area for preparing patches, storing tools and supplies, or other uses. Use protective cover as work surface, if necessary.
2. Instruct workers about requirements for protection of geomembrane, such as, handling geomembrane material in high winds, handling of equipment, and walking on geomembrane surfaces. Shoes of personnel walking on geomembrane shall be smooth bonded sole or be covered with smooth type of overboot. Prohibit smoking, eating, or drinking in vicinity of geomembrane, placing heated equipment directly on geomembrane, or other activities that may damage geomembrane.
3. Do not operate equipment without spark arrestors in vicinity of geomembrane material nor place generators or containers of flammable liquid on geomembranes.
4. Protect from vehicle traffic and other hazards.
5. Keep free of debris during placement.
6. Prevent uplift, displacement, and damage by wind.
7. Only small rubber-tired equipment, with maximum tire inflation pressure of 5 pounds per square inch, shall be allowed directly on geomembrane, unless otherwise approved by Engineer. Demonstrate that equipment can be operated without damaging geomembrane.

C. Placement:

1. Miscellaneous products required for completion of geomembrane installation shall be in accordance with this specification and geomembrane manufacturer’s recommendations.
2. Reduce field seaming to the minimum amount possible. Horizontal seams on slopes will not be acceptable. Seams parallel to toe shall be at least 5 feet from toe. Align rough-sided sheets in manner that maximizes their frictional capabilities along slope.
3. Prevent wrinkles, folds, or other distress that can result in damage or prevent satisfactory alignment or seaming. Provide for factors such as expansion, contraction, overlap at seams, anchorage requirements, seaming progress, and drainage.
4. Temporarily weight sheets with sandbags to anchor or hold them in position during installation. Use continuous holddowns along edges to prevent wind flow under sheet.
    a. Bag Fabric: Sufficiently close knit to preclude fines from working through bags.
    b. Bags: Contain not less than 40 pounds nor more than 60 pounds of sand having 100 percent passing No. 8 screen and shall be securely closed after filling to prevent sand loss.

c. Do not use tires or paper bags, whether or not lined with plastic. Burlap bags, if used, shall be lined with plastic.
d. Immediately remove damaged or improperly sealed bags from work area, and clean up spills.

5. Anchor perimeter of geomembrane as shown or as otherwise approved by Engineer. Anchor and seal geomembrane to structures, pipes, and other types of penetrations as shown or as approved by Engineer.
6. Place overlying geotextile immediately following completion of geomembrane installation and field testing as acceptable to Engineer.

D. Field Seams:

1. Wipe sheet contact surfaces clean to remove dirt, dust, moisture, and other foreign materials and prepare contact surfaces in accordance with seaming method accepted by Engineer.
2. Lap sheet edges to form seams. Adjust edges to be seamed and temporarily anchor to prevent wrinkling and shrinkage.
3. Seams shall not go through a boot. Locate seams minimum of 2 feet from boot.
4. Avoid seam intersections involving more than three thicknesses of geomembrane material. Offset seam intersections at least 2 feet. Extend seams through anchor trench to sheet edges.
5. Seal seam “T” intersections by removing excess material and extrusion welding lap joint.
6. Seam sheets together, using fusion-extrusion or hot-wedge welding system, equipment, and techniques.
7. Capping of Field Seams: Use 8-inch wide (minimum) cover strip of same thickness as geomembrane (and from same roll, if available). Position strip over center of field seam and weld to geomembrane using fillet weld each side, including copper wire as described above for spark testing.

3.04 PLACING PRODUCTS OVER GEOMEMBRANE

A. Prior to placing material over geomembrane, notify Engineer. Do not cover installed geomembrane until after Engineer provides authorization to proceed.

B. Do not place granular materials on geomembrane where typical height of wrinkles is greater than 2 inches and spacing between wrinkles is less than 10 feet.

C. Do not place soil materials in manner that will cause wrinkles to fold over or become confined to form a vertical ridge.

D. Place soil materials when geomembrane is cool and contracted and wrinkles are minimized.

E. If tears, punctures, or other geomembrane damage occurs during placement of overlying products, remove overlying products as necessary to expose damaged geomembrane, and repair damage as specified in Article Repairing Geomembrane.

F. Geomembrane installer shall remain available during placement of overlying products to repair geomembrane if damaged.

3.05 REPAIRING GEOMEMBRANE

A. Any geomembrane surface showing injury because of scuffing, penetration by foreign objects, or distress from rough subgrade shall be replaced or covered and sealed with an additional layer of geomembrane material of proper size.

B. Repair damage or rejected seams with pieces of flat and unwrinkled geomembrane material free from defects and seams. Patches shall be tightly bonded on completion of repair Work.

C. Patch shall be neat in appearance and of size 4 inches larger in all directions than area to be repaired. Round corners of patch to minimum 1-inch radius.

D. Prepare contact surfaces and seam patch in accordance with paragraph Field Seams.

1. Pull and hold flat receiving surface in area to be patched.
2. Seal each patch by extrusion welding continuous bead along edge, with no free edge remaining.
    a. Vacuum box test each patch on completion.

3.06 FIELD QUALITY CONTROL

A. Prior to starting geomembrane installation and daily thereafter for installation on subgrade, geomembrane installer shall certify in duplicate that surface upon which geomembrane shall be installed is acceptable, on form located at end of section.

B. Identify each test by date of sample, date of test, sample location, name of individual who performed test, standard test method used, list of departures from standard test methods, at minimum.

C. In-Place Observation and Testing:

1. Visually inspect geomembrane sheets, seams, anchors, seals, and repairs for defects as installation progresses and again on completion.
2. Depending on seam welding equipment used, test each seam and repair using vacuum testing device, spark testing device, or air channel pressure test for double wedge welded seams.
3. Perform testing in presence of Engineer.

D. Field Testing Equipment:

1. Tensiometer:
   a. Motor driven portable tensile tester with jaws capable of traveling at measured rate of 2 inches per minute (for HDPE) and 20 inches per minute (for LLDPE).
   b. Equip with gauge which measures force in unit pounds exerted between jaws.
   c. Minimum capacity of 500 pounds.
2. Vacuum Box: Conform to ASTM D5641.
3. High Voltage Spark Detector: Tinker and Rasor Holiday Detector, Model AP-W, set at 20,000 volts.

E. Field Seam Sampling:

1. Verify that seaming equipment and operators are performing adequately. Produce test seam samples at beginning of each shift for each seaming crew. In addition, if seaming has been suspended for more than 1/2 hour, or if breakdown of seaming equipment occurs, produce test seam samples prior to resuming seaming.
2. Sample Size: 12 inches wide plus seam width, and 30 inches long.
3. Nondestructive Sampling (Test Seams):
   a. For boots and seams that cannot be otherwise tested, insert copper wire for spark test at edge of overlapping sheet in extrudate of weld prior to filet welding. Position to within 1/8 inch of sheet edge.
   b. Frequency: Minimum one Sample per 500 feet of field seam or portion thereof, and minimum one Sample per seaming crew per 5-hour work period.
   c. Produce Samples using same materials, equipment, personnel, and procedures as field seams made at time of work in progress and under same conditions.

4. Destructive Sampling:
    a. Frequency: Minimum one sample per 500 linear feet of field seem. Engineer reserves the right to reduce this testing requirement if other seam tests appear adequate for assuring seam quality.
    b. Remove Samples from field seams at locations selected by Engineer.
    c. Repair field seams in accordance with repair procedures specified in these Specifications.
5. Sample Identification:
    a. Number, date, and identify each sample as to personnel making seam and location of sample or location of field seam Work in progress at time Sample is made.
    b. Mark location of Sample, or location of field seam in progress at time sample is made, on panel/sheet layout drawing.
6. Contractor shall conform to the following testing requirements for nondestructive and destructive seam tests used to define quality of field seams:
    a. Perform shear and peel testing on portion of sample as specified hereinafter using approved field tensiometer.
    b. Send portion of sample by overnight service to approved Independent Testing Agency for verification of field test results.
    c. Archive a portion of sample for potential verification testing later.
    d. Independent Testing Agency shall provide preliminary test results by facsimile or other means no later than 24 hours after Samples have been received from Contractor, unless otherwise approved by Engineer. Certified test results shall be provided no more than 7 days after Samples have been received from Contractor.
7. Conform to ASTM D6392 and this specification.
    a. Seam testing for geomembrane includes strength tests, vacuum box testing, high voltage spark tests, air channel pressure tests, and probing.
    b. Leak testing includes water level leakage testing, electrical resistivity testing, and tracer dye leakage testing.

F. Field Seam Strength Sample Testing:

1. General:
    a. Test each sample for seam peel and tensile strength.
    b. Save test samples, including specimens tested, until notified by Engineer relative to their disposal.
    c. Each sample that fails under test shall be shipped immediately by express delivery to Engineer for determination of corrective measures required.

2. Field Seam Acceptance Criteria: Per table under Article 2.02, Geomembrane.
    a. Bonded Shear Strength of HDPE:
        1) In Shear: Minimum 2 pounds per inch width per mil thickness as determined in accordance with ASTM D6392.
        2) In Peel: Minimum 1.2 pounds per inch width per mil thickness as determined in accordance with ASTM D6392.
3. Test Failure: If sample fails, entire field seam from which it was taken shall be considered a failure and shall be rejected as a result of nonconformance with specification requirements. Comply with following corrective measures:
    a. Nondestructive Sample Failure: Rerun field weld test using same sample. If that test passes, Contractor may assume error was made in first test and accept field seam. If second test fails, cap each field seam represented by failed sample and submit new test Sample made during capping procedure.
    b. Destructive Sample Failure: Rerun field weld test using new sample from same seam. If that test passes, Contractor may assume error was made in first test and accept field seam. If second test fails, either cap field seam between two previous passed seam test locations that include failed seam or take another sample on each side of failed seam location (10 feet minimum), and test both. If both pass, cap field seam between two locations. If either fails, repeat process of taking samples for test. Each field seam shall be bounded by two passed test locations prior to acceptance.

G. Vacuum Box Testing of Geomembrane Welds:

1. Vacuum box test each of these types of welds: Fillet, extrusion lap, and single hot-wedge fusion lap.
2. Testing Procedures: Conforming to ASTM D5641.

H. High-Voltage Spark Testing of Fillet Welds:

1. Provide each seam to be tested with copper wires properly embedded in seam as shown and with provisions for electrical grounding to test equipment.
2. Pass spark tester along length of seam containing copper wire.
3. Presence of a visible spark along tested seam shall be evidence of a faulty seam.
4. Mark faulty areas for repair and retesting.

I. Air Channel Pressure Testing of Double Hot-Wedge Seam:

1. Insert a needle with gauge in air space between welds. Pump air into space to 30 psi and hold for 5 minutes.
2. At end of 5 minutes, depressurize seam by placing needle hole in air space between welds at opposite end of seam and observe gauge.
3. Seam is acceptable if seam maintains at least 27 psi during 5-minute hold and pressure drops within 30 second of depressurization.
4. Seam is acceptable if seam maintains a minimum of 27 psi. If pressure drops below 27 psi during test period, or does not drop during 30-second depressurization period, repair needle holes and retest seam by same procedure or vacuum box test along entire length of seam.
5. Vacuum box test entire length of seam if second air pressure test fails.
   a. If no bubbles appear in vacuum box, lower weld will be considered defective and upper seam is acceptable.
   b. If bubbles appear in vacuum box, repair each defective area by extrusion welding and test again by vacuum box.
6. As alternative to vacuum box testing, apply soap solution to exposed seam edge while maintaining required air channel test pressure.
   a. If bubbles appear, mark, trim unbonded edge, and extrusion weld defective areas.
   b. If no bubbles appear and test pressure cannot be maintained, leak is judged to be in bottom or second seam.
7. If leak is judged to be in bottom seam, cap strip length of seam tested will be accepted.
8. Mark and repair needle holes.

J. Documentation:

1. Record Documents, include the following:
   a. Panel and sheet numbers.
   b. Seaming equipment and operator identification.
   c. Temperature and speed setting of equipment.
   d. Date seamed.
   e. Identity and location of each repair, cap strip, penetration, boot and sample taken from installed geomembrane for testing.

3.07 MANUFACTURER'S SERVICES

A. Provide authorized representative of geomembrane manufacturer onsite for technical supervision and assistance during the following:

1. Preparation and inspection of surfaces on which geomembrane is to be placed.

2. Inspection of geomembrane prior to installation.
3. Installation of geomembrane.
4. Placement of cover over installed geomembrane.
5. Certification of Proper Installation.

3.08 CLEANUP

A. Clean up work area as the Work proceeds. Take particular care to ensure that no trash, tools, and other unwanted materials are trapped beneath geomembrane and that scraps of geomembrane material are removed from the work area prior to completion of installation.

3.09 SUPPLEMENT

A. The supplement listed below, following "End of Section," are a part of this Specification.

1. Geomembrane Installer's Certification of Subsurface Acceptability.

END OF SECTION

GEOMEMBRANE INSTALLER'S CERTIFICATION OF SUBSURFACE ACCEPTABILITY

Geomembrane installer, _____
for the Lower River and Inner Harbor Sheboygan River Area of Concern, hereby certify that supporting surfaces are acceptable for installation of geomembrane, undersigned having personally inspected condition of constructed surfaces. This certification is for areas shown on Attachment or defined as follows:

_____

_____

_____

_____

Condition of supporting surfaces in defined area meets or exceeds minimum requirements for installation of geomembrane.

Signed: _____
(Representative of Geomembrane Installer)

_____
(Position)

Date: _____

Witness: _____

SECTION 35 20 25.23
MECHANICAL ENVIRONMENTAL DREDGING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Provide labor, materials, equipment, transportation, and supervision necessary to perform mechanical dredging of contaminated sediments and to convey material from dredge to either the Campmarina or WINSA sites (or direct to the landfill if the material meets the transportation requirements) and to exercise control and abatement of pollution resulting or likely to result from dredging and conveyance of dredged materials.

B. Work consists of the following:

1. Mobilization, demobilization, and Site setup at both the Campmarina and WINSA sites.
2. Temporary construction, operation, and restoration of staging and dewatering pad areas.
3. Temporary construction, operation, monitoring, and demobilization of water treatment systems.
4. Temporary construction, operation, and demobilization of offloading platforms.
5. Installing and operating turbidity control and monitoring equipment on Project.
6. Pre-dredge, post-dredge, and interim bathymetric surveys.
7. Mechanically dredging of approximately 167,000 cubic yards of sediment consisting of 158,000 cubic yards of non-TSCA sediment and 9,000 cubic yards of TSCA sediment.

1.02 DEFINITIONS

A. Critical Structures: Consideration of offsets or modified operating plans for shorelines, docks, bulkheads, all utilities, and bridges.

B. Debris: Includes, but is not limited to, material such as posts, stumps, logs, wood, tires, strapping, cable, chain, or rock that is larger than 8 inches or would impede bucket closure.

C. Downtime: Lost time associated with Contractor’s operational delays (including weather), mechanical delays, or delays imposed on Contractor by Owner.

D. Dredged Material: All material removed from below existing bottom and within tolerances noted, regardless of type, nature, or condition encountered, including rock. Dredged material is everything except for debris.

E. In Situ: Undisturbed physical and chemical condition of dredge material prior to start of dredging.

F. Owner: The United States Environmental Protection Agency (USEPA) is Owner of the Work.

G. Engineer: CH2M HILL is the project Engineer.

H. Contractor: The Contractor performing the Work described herein.

I. Overdredge Tolerance: Maximum vertical thickness below target dredging limit or cutline allowed for acceptance and/or payment.

J. Underdredge Tolerance: Maximum vertical thickness above target dredging limit or cutline allowed for acceptance and/or payment.

K. Residuals: Residual contamination leftover after dredging as a result of missed material, sloughing, resettled contamination or newly detected contamination above the cutline.

L. Running Time: Amount of time dredge is operational.

1.03 REFERENCES

A. The following is a list of standards that may be referenced in this section:

1. City of Sheboygan Ordinances.
2. Code of Federal Regulations, Title 33 – Navigation and Navigable Waters.
3. USACE EM 1110-2-1003 Engineering and Design – Hydrographic Surveying.
4. Code of Federal Regulations, Title 40 – Protection of Environment.

1.04 PERMITS

A. Comply with all permit conditions and requirements related to this Work. Permit conditions and regulations related to this Work include, but are not limited to:

1. Federal CWA Section 404/10 Permit.
2. Federal Endangered Species Act, Section 7 Consultation.
3. Federal Section 106 Cultural Resources Consultation.
4. Federal Local Notice to the Mariners.
5. State of Wisconsin Chapter 30 Permit.
6. State of Wisconsin CWA Section 401 Water Quality Certification.

7. State of Wisconsin WPDES Wastewater Permit.
8. State of Wisconsin WPDES Permit No. WI-0046558-05-0, Carriage and/or Interstitial Water Resulting from Dredging Operations
9. State of Wisconsin WPDES Permit No. WI-S067831-3, Construction Site Stormwater Permit to Discharge.
10. Threatened and Endangered Species Coordination.
11. City of Sheboygan Erosion Control Permit.
12. City of Sheboygan Conditional Use Permit.

1.05 SITE CONDITIONS

A. Launch Site: Contractor shall make arrangements for launch sites.

B. Provide temporary fencing, security and lighting throughout the project. Electrical power shall be supplied by the Contractor and prior arrangements and testing shall be done before mobilizing the equipments to check the compatibility. Supply materials, equipment, and labor to make electrical connections associated with the setup area. Provide the facilities that include Contractor and Engineer work trailers, break areas, crew and equipment parking, potable water, first –aid supplies and toilets. The dredge support area shall be illuminated from sunset to sunrise during the operational hours. Fencing shall be installed to prevent the public access into the work area. Coordinate with Section 01 50 00, Temporary Facilities and Controls.

C. The fuel tanks and any flammable products stored in the staging area shall be fenced and secured properly and shall comply with the federal, state, and local regulations.

1.06 HEALTH AND SAFETY

A. Provide competent personnel to perform Work. Personnel shall be trained, including HAZWOPER training, and have prior experience using all equipment, meeting environmental requirements, and achieving dredging tolerance limits.

B. Provide a full-time, onsite Health and Safety Manager for entire time Contractor is onsite.

C. The Contractor shall assign a full time onsite Site-Safety Officer (SSO) to the project. The SSO shall have at least 5 years of experience implementing a health and safety program on construction sites similar to this project. No field work will be performed unless this person is onsite or an approved alternate is available. The SSO shall ensure compliance with the approved health and safety plan and its addendum’s. The Contractor shall be responsible for providing all required PPE for its workers and lower tier subcontractors in accordance with the Contractor’s plans.

1.07 SUBMITTALS

A. Action Submittals:

1. Survey Plan: Within 7 days after Notice of Award, submit a Survey Plan for approval that includes, but it not limited to:
   a. Describe approach for bathymetric survey, debris reconnaissance survey, and utility survey.
   b. Method to be used (multi-beam).
   c. Surveyor's relevant qualifications and experience.
   d. Approximate number of survey points within a given area.
   e. Precision of equipment.
   f. Accuracy of survey.

2. Survey Results Report: Within 7 days after completion of survey, submit a Survey Results Reports for approval that includes, but it not limited to:
   a. Results of bathymetric survey, debris reconnaissance survey, and utility survey.
   b. Deviations from approved Survey Plan.
   c. Supply data to determine dredge cut prism in electronic and hard copy format including northing and easting points with top of sediment and required depth of sediment to be removed coordinates. These x, y, z_1, and z_2 coordinates will be supplied as an ASCII file.

3. Dredging and Operations Plan: Within 21 days after Notice of Award, submit a Dredging Plan for approval that includes, but it not limited to:
   a. Description and list of operations that will be performed in connection with removal and transportation of sediments by dredging.
   b. Description of plant and equipment that will be used in removal and transport of sediment with pertinent details for each piece of equipment (dimensions, horsepower, bucket size, type, crew).
   c. Sequence of areas to be dredged.
   d. Schedule indicating start and completion dates for each dredging area.
   e. Proposed staging or dewatering areas.
   f. Dredging methods to be performed in each area including average cycle times and hours of operations.
   g. Dredge movement procedure and frequency.
   h. Proposed methods for dredging near shallow waters, seawalls (shoreline stability structures), and critical structures.
   i. Proposed methods for dredging near and protection of underwater utilities.
   j. Methods for achieving dredging depth and tolerance quality control. Method(s) for conveying dredge material to offloading site.

k. Transfer and clean-up plans showing methods and procedures for material off-loading and safety program for containing all materials and water.
l. Waterway markers, maintenance of boat traffic during dredging activities, and protection of commercial and recreational watercraft during dredging.
m. Method of cleaning equipment and decontamination at Project completion.
n. Means to control and accurately document positioning of dredge barge and prevent over dredging.
o. Management plan for debris removal and disposal.
p. Fueling source, methods, equipments, and location.
q. Describe communication plan and chain-of-command for normal and emergency activities.
r. Proposed landfill when moving between TSCA and non-TSCA areas, and transportation routes for disposal of sediments.

4. Turbidity and Resuspension Management Plan: Within 21 days after Notice of Award, submit a Turbidity and Resuspension Management Plan for approval. Turbidity and Resuspension Management Plan shall address control of migration of suspended solids to meet water quality requirements in Part 3. This submittal shall be consistent with Water Quality Management and Monitoring in Part 3 and shall consist of:
   a. Methods and Best Management Practices of turbidity control to meet permitting requirements as specified in the State of Wisconsin Chapter 30 Permit including material, equipment, design and placement, and response to noncompliance.
   b. Final design of air bubble curtain or silt curtains.
      1) Air bubbler blower design operating pressure and output volume.
      2) Distribution pipe size and hole spacing.
   c. Final design of turbidity control including anchoring systems.
   d. Final design of any floating debris and oil booms.
   e. Description of materials used.
   f. Methods for installing, inspecting, and maintenance of turbidity controls.
   g. Performance monitoring plan.
   h. Contingency measures to control turbidity from dredging operations.
   i. Schedule for submittal of turbidity sampling results.
   j. Contractor shall provide all data recorded, whether listed or not.

5. Environmental and Spill Response Plan: Within 21 days after Notice of Award, submit an Environmental and Spill Response Plan including procedures and contingency actions associated with the following:
   a. Waste oil, bilge water, hazardous waste, garbage, sewage, handling, and disposal.

b. Liability.
c. Onboard spill notification procedures.
d. Incident notification procedures.
e. Transfer mitigation procedures.
f. Explosion or fire.
g. Fines and penalties.
h. Spill control and remediation to land.
i. Casualty investigation review.
j. Contractor (primary), and Owner and Engineer (secondary) shall be responsible for reporting all spills in accordance with the State of Wisconsin Chapter 30 Permit and all other applicable regulations.

6. Water Treatment Plan: Within 21 days after Notice of Award, submit a Water Treatment Plan to meet the discharge requirements of the WPDES permit for approval that describes at a minimum the following:
   a. Unit processes.
   b. Pumps.
   c. Piping.
   d. Instrumentation.
   e. Equipment layout.
   f. Equipment size.
   g. Chemicals.
   h. Flow rates.
   i. System performance monitoring.
   j. Residuals management.
   k. System operation.

7. Contingency Plan: Within 21 days after Notice of Award, submit a Contingency Plan including procedures and contingency actions associated with the following:
   a. Non-compliance of applicable turbidity criteria during dredging operations.
   b. Floods, heavy rainfall, and storm surge events.
   c. Failure of sediment controls.

B. Information Submittals:

1. Daily Dredging Reports:
   a. Submit daily reports, addressing progress of Work, beginning with mobilization to Site and ending with demobilization. Submit no later than noon of next calendar day following reported day.
   b. Daily Work Report of Dredging Activity:
      1) Day and date.
      2) Project name and number.

3) Weather conditions.
4) Location of dredging station-to-station or coordinates.
5) Hours worked.
6) Hours of downtime. Log of downtime hours will be maintained by both Contractor and Engineer with explanation for all downtime periods greater than 15 minutes. Log will be signed off at end of each shift by both Contractor and Engineer.
7) Health and safety incidents.
8) Approximate volume and character of materials dredged.
9) Soundings taken.
10) Wildlife sightings/encounters.
11) Accidents, spills, and mishaps, and actions taken to contain and correct incident.
12) Name of individual making report.
13) Sand volume placed and areas covered.
14) Results of turbidity monitoring.
15) Observations from water treatment transport pipe daily inspection for leaks and other problems.

c. Water Quality Report:
1) Date and time of day Sample(s) were taken.
2) Project name and number.
3) Map indicating sampling and dredging locations.
4) Methods used in collection, handling, storage, and quality control for sample analyses.
5) Water temperature.
6) Depth of water body/water elevation.
7) Sample depth and coordinates.
8) Weather conditions (wind direction, velocity).
9) Name of individual making report.

2. Weekly Dredging Reports:
a. Submit weekly reports with daily report for every week of dredging or portion thereof.
b. Weekly Work Report of Dredging Activity: Map showing areas dredged, estimated volume dredged, results of turbidity monitoring, and depths dredged.
c. Report survey in weekly progress report. If dredge depths are satisfactory, survey will be deemed as post-dredge bathymetric survey.

1.08 MARINE REQUIREMENTS

A. Make arrangements for all marine equipment and facilities including staging areas, dock facilities, and transportation of equipment, material and personnel to and from Work Site.

B. Provide all necessary equipment and personnel, and otherwise ensure that all of its marine equipment complies with all regulatory and safety requirements.

C. Conduct operation so that marine and recreation traffic is maintained. Notify United States Coast Guard, United States Army Corps of Engineers and other agencies when offshore work is to begin, and furnish a copy of notification to Engineer. Abide by all applicable marine rules and requirements. Conform to requirements of permits and certifications obtained by Engineer.

D. All floating operations shall be in accordance with all applicable laws, rules, and customs. All floating equipment shall be coordinated with United States Coast Guard.

E. Display signals lights and conduct operation in accordance with general regulations of United States Coast Guard governing lights, day signals, and markers.

F. Use great care to prevent spills of fuel or other contaminants. Contractor shall be equipped with supplies and equipment that are readily accessible to capture and remove any spills and conform to various regulations for maintaining water quality. Use special fuel barges, as approved by agencies for fueling on-water equipments and tugboats.

1.09 PRE-DREDGE, PROGRESS, AND POST-DREDGE HYDROGRAPHIC SURVEYS

A. Engage a registered Surveyor licensed in State of Wisconsin and experienced in hydrographic surveys to perform:

1. Pre-dredge hydrographic survey before dredging operations commence.
2. Progress (or interim) hydrographic surveys.
3. Post-dredging hydrographic surveys to document conditions at completion for dredging.
4. The survey area includes the Dredging Project Area and the vicinity of the Offloading Platforms at the Campmarina and WINSA sites as shown on the Drawings.

B. Hydrographic survey methods and means for verifying dredged elevations shall be by electronic means and calibrated to Project datum prior to beginning of Work.

C. Pre-dredge Hydrographic Survey: Survey data shall be recorded and confirmed against Project dredge volumes and areas on Drawings. Communicate any differences to Engineer.

D. Progress Hydrographic Surveys: Perform progress hydrographic surveys on a weekly basis during dredging work window.

E. Post-dredge Hydrographic Survey.

F. Hydrographic survey accuracy shall meet the following requirements:

1. Horizontal positioning for depth measurements shall use electronic positioning modes or systems, or hybrid combinations of instrumental and electronic data measurement and recording systems to measure, adjust, correlate, print, plot, and record horizontal and vertical observations.
2. USACE hydrographic surveying requirements per EM 1110-2-1003 Engineering and Design – Hydrographic Surveying, shall be followed.

G. Owner, Engineer and Contractor will be permitted to have an observer present on boat with Subcontractor during all survey events (and taking of soundings), if desired.

1.10 DEBRIS RECONNAISSANCE SURVEY

A. At Contractor's option, conduct a debris reconnaissance survey throughout dredging areas to assess and evaluate quantity and type of debris.

1.11 UTILITY SURVEY

A. Locate all utilities, including but not limited to, underwater and overhead utilities throughout dredging areas.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. Protect adjacent structures and utilities from damage resulting from operations including, but not limited to, settlement, consolidation, displacement, cracking, vibration, undermining, washout, and uplift caused by dredging, or other operation.

3.02 HEALTH AND SAFETY

A. The Contractor shall be responsible for implementing the Contractor's plans.

3.03 DEBRIS REMOVAL

A. Debris shall be removed prior to dredging, surveyed prior to dredging, or option to proceed without surveying or removal at Contractor's risk.

B. Debris encountered when dredging will be left in place, to extent possible, unless it interferes with dredging. Debris must be removed if it is above the cutline within the 10 foot by 60 foot designated access channel. Debris removed shall be handled according to approved Dredging Plan.

C. Each day during dredging operations, the Contractor shall use a boat to collect and remove floating debris resulting from project activities. Floating debris shall also be removed from within barges, if applicable. Debris removed during dredging operations, shall also be collected and removed from the site. Where debris is found to interfere with environmental bucket closure, a conventional clamshell bucket may be used to extract the debris.

D. Debris shall be offloaded onto the dewatering pad, and placed in a separate area or rolloff box on the dewatering pad. Debris removed from TSCA area shall be washed off with power washer before placing it in a roll off box or separate area for disposal. Once sufficient debris is collected, or at the end of the dredging work, debris shall be transported offsite for disposal at an appropriate landfill.

3.04 PRE-DREDGE

A. Contact utility owner to confirm location of all utilities before dredging. Maintain adequate distance from utilities to prevent damage. Owner approved operational plan required in advance of working around utilities.

B. Confirm prescribed offsets from critical structures. Owner approved operational plan required in advance of working around critical structures.

3.05 DREDGING

A. Dredging shall include removal of material in designated areas to dredge limits, depth, lines, and grade as shown on Drawings and as provided in dredge prism.

B. For areas of Overburden (non-TSCA sediment overlying TSCA sediment) only, remove material to within 6 inches above or zero inches below target dredge elevation.

1. Side slopes shall not be steeper than slopes as shown on Drawings.
2. Remove sediment to specified elevations for at least 80 percent of dredged area and to within 0.5 foot of 99 percent of dredged area.
3. Do not remove any virgin glacial till material.
4. Remove all sediment that has not met these tolerance requirements.

C. For areas of non-TSCA to be dredged, remove material to within zero inches above or 6 inches below target dredge elevation.

1. Side slopes shall not be steeper than slopes as shown on the Drawings.
2. Remove sediment to specified elevations for at least 80 percent of dredged area and to within 0.5 foot of 99 percent of dredged area.
3. Do not remove any virgin glacial till material.
4. Remove all sediment that has not met these tolerance requirements.

D. For areas of TSCA to be dredged, remove material to within zero inches above or 6 inches below target dredge elevation.

1. Side slopes shall not be steeper than slopes as shown on Drawings.
2. Do not remove any virgin glacial till material.
3. Remove all sediment that has not met these tolerance requirements.

E. Do not disturb sediments outside of dredge footprint.

F. Use dredging techniques that employ best management practices to minimize turbidity and recontamination of dredged areas.

G. Responsible for all regulatory permit-related damages as a result of over-depth dredging or dredging outside given limits for dredging. Dredging flotation for access to docks or for access to dredging sites will be allowed, subject to Engineer's approval.

H. Do not discharge, or permit discharge of any oils, fuels, bitumens, garbage, trash, sewage, or other materials into receiving waters which may be harmful to fish, wildlife, or vegetation.

I. Dredging will be performed 24 hours per day, 6 days per week.

3.06 WATER QUALITY REQUIREMENTS

A. Continuously monitor turbidity with real time monitoring equipment and report results with Daily Dredging Report.

B. Turbidity shall not exceed a total suspended solids (TSS) concentration listed in the State of Wisconsin Chapter 30 Permit as measured at monitoring point as shown on Drawings and at one-half water column depth.

C. Take all necessary measures to comply with State of Wisconsin WPDES Permit No. WI-0046558-05-0 Carriage and/or Interstitial Water Resulting from Dredging Operations.

D. Operate mechanical dredge bucket to minimize material agitated by bucket. No leveling of dredging windrows with the bucket will be allowed.

E. Provide floating absorbent oil containment to contain debris and contaminants. Replace as necessary to prevent breakthrough.

F. Install, operate, maintain, and remove turbidity control to prevent movement of TSS released to surrounding areas.

G. Dredging operations shall be stopped if water quality criteria exceed established criteria at monitoring location. A revised Turbidity and Resuspension Management Plan shall be submitted to address turbidity problems. No dredging shall occur until revised plan has been reviewed and approved.

3.07 DREDGING EQUIPMENT

A. Production Rate: The dredge production/unloading rate for removal and disposal of the dredge material shall be capable of meeting the overall project schedule.

B. Mechanical Dredging:

1. Dredging of soft sediments shall be performed using an environmental clamshell bucket having the following capabilities and characteristics
    a. Provides a level cut during the closing cycle.
    b. Completely encloses the dredged sediment and water captured.
    c. Has escape valves or vents that close when the bucket is withdrawn from the water.
    d. Has smooth cut surface with no teeth on the bucket.
    e. Has hardware that allows the operator to position the bucket using positioning and machine control software to meet the specified horizontal and vertical accuracy requirements.
2. A standard digging bucket, modified with covers and vents may be used only when material cannot be dug by the environmental bucket and it shall meet the following requirements:
    a. Completely encloses the dredged sediment and water captured.
    b. Has escape valves or vents that close when the bucket is withdrawn from the water.
    c. Has hardware that allows the operator to position the bucket using positioning and machine control software to meet the specified horizontal and vertical accuracy requirements.
3. Dredging Contractor shall use software that allows the operator to control bucket penetration to avoid overfilling and minimize resuspension.

4. In areas where site conditions will not allow the use of the environmental bucket or a standard digging clamshell bucket, the Contractor will be allowed to use an excavator bucket with the following:
    a. A “thumb” or other cover mechanism on the bucket such that resuspension of sediment or entrapped water is prevented as much as possible.
    b. Incorporates as much of the characteristics of the environmental clamshell bucket listed above, as approved by the Engineer.
    c. Has hardware that allows the operator to position the bucket using positioning and machine control software to meet the specified horizontal and vertical accuracy requirements.
5. Dredging Contractor shall submit to Engineer a proposal for alternative means of mechanical dredging if conditions dictate.

C. Best management practices, including but not limited to the following, shall be followed during dredging operations and periodically reviewed by Contractor with dredging crews:

1. Use biodegradable vegetable oil in lieu of hydraulic oil to operate dredge hydraulics.
2. Rate of lowering and raising of the dredging bucket shall be minimized to minimize sediment resuspension and to minimize settling out of re-suspended solids in areas previously dredged.

D. Overlap dredge cuts to avoid leaving ridges or windrows of contaminated sediment between adjacent cuts.

E. Use hospital-grade mufflers to limit engine noise on dredge equipment, if used.

F. Misplaced Materials: Subcontractor shall not discharge or cause any dredged materials to be placed into any area other than designated disposal area. Contractor shall be responsible for removal of any misplaced material and shall promptly recover same at their own expense.

G. Dredge and bucket to be equipped with Positioning System consisting of an integrated GPS system that continuously measures vertical and horizontal position of dredge, bucket, and real-time dredge prism. System shall provide a permanent record of positions referenced to Project coordinate system.

1. Site Control Points:
    a. Site Control Points are control points that will not be used for establishing further control but are required to support collection of data for dredge and bucket positioning.
    b. All Site control marks are to be named in a systematic fashion and fully described.

c. Site control point positions are to be determined by GPS using static observations or by kinematic techniques to within the following tolerances:
   1) Horizontal Accuracy: +/-0.05 foot.
   2) Vertical Accuracy: +/-0.10 foot.

d. All Site control points should be clear of obstacles that may cause GPS multi-path problems or radio signal interference such as fences, buildings, and radio masts.

e. Accuracy and Tolerances: Location of bucket shall be measured and recorded to the following tolerances:
   1) Horizontal Accuracy: +/- 3.0 feet.
   2) Vertical Accuracy: + 0 foot /- 0.5 foot.

f. Required Equipment:
   1) Horizontal and vertical sensors for bucket positioning accurate at a minimum to +/-0.1.
   2) Electronic water gauge for measuring water levels in dredge area.
   3) Real-time tide measurement and positional information through RTK GPS.
   4) Dredge must have two RTK-GPS receivers to provide heading information. Antennae for these sensors must be located at least 20 feet apart.
   5) Onboard or remote computer equipment capable of recording all positional data as well as providing accurate, real-time data to dredge operator.
   6) Computer interface program (such as DredgePack) with ability to record all dredge and bucket position data and to suspend recording and denote suspension of and/or suspend production operations when GPS quality drops below standards detailed under GPS Quality Control.

g. Dredging operations shall be suspended in the event of positioning equipment failure. All such incidents are to be logged by equipment operator and documented on Daily Work Report.

3.08 MATERIAL BARGES AND TOW BOATS

A. The number and size of tow boats and self-propelled barges to be used shall be specified in Dredging and Operations Plan. Tow boats and self-propelled barges utilized by Contractor for this purpose shall be of a size adequate for pushing the anticipated load and shall have necessary reserve power for maneuvering with material barges under emergency conditions as well as for control of material barges at the offloading location.

B. Provide material barges capable of transporting dredged material to the Campmarina and WINSA properties for unloading.

C. Provide and maintain markings on material barges clearly indicating the draft of the barge. Each barge shall be used with an ullage table (i.e., displacement table) to provide required information regarding tonnage located in/on the barge.

D. Load barge evenly to maintain the stability of the barge. During loading operations, measure and record on the daily progress report the tonnage of each barge upon departure from the dredge area and upon arrival at the unloading/disposal area.

E. The Contractor shall provide documentation of the daily inspection of the barges and equipment to Engineer.

3.09 MANAGEMENT OF DREDGE MATERIAL

A. Mechanically dredged sediment and accompanying water shall be managed to facilitate dewatering of the sediment, treatment and disposal of the water, and stabilization of sediment as necessary for loading into trucks and disposal into USEPA Region 5 Resource Conservation and Recovery Act (RCRA) Subtitle D landfill or TSCA permitted landfill.

B. Free water on top of the sediment shall be pumped directly from the barge to the temporary onsite water treatment system. Contractor shall acquire a suitable pump for this operation.

C. After free water is pumped out, Contractor will assess the need to add a reagent to stabilize the sediment to meet disposal facility requirements. If the reagent addition is necessary, Contractor will mix reagent in with the sediment before transportation of the sediment to the approved landfill. Reagent will continue to be mixed in until the sediment meets disposal facility requirements. Contractor will perform as necessary to evaluate appropriate reagent percentages.

D. Contractor will be responsible for removing spillage after offloading is completed. Offloading platform shall include drip pan structure to capture any sediment that falls from offloading bucket.

E. Contractor shall select the Resource Conservation and Recovery Act (RCRA) Subtitle D landfill and TSCA-permitted landfill for approval by the Engineer and comply with the disposal requirements of those landfills.

F. Stabilized sediment will be directly loaded into a lined truck trailer that is staged on the sediment stabilization pad. Once the trailer is loaded, the bed will be covered with a retractable tarp, and the exterior of the trailer will be washed with a pressure washer to remove visible sediment and soil.

G. Once decontamination is completed, the truck will depart the site and transport the sediment to an offsite USEPA Region 5 approved Resource Conservation and Recovery Act (RCRA) Subtitle D landfill or TSCA landfill for disposal.

3.10 UNAUTHORIZED PLACEMENT OF DREDGED MATERIALS

A. Excavated material that is deposited other than in places designated or approved will not be paid for and Contractor will be required to remove the misplaced excavated material and deposit it where directed at Contractor's cost.

3.11 WASTEWATER TREATMENT AND DISPOSAL

A. Wastewater will be generated from several sources such as, handling, stabilization, and disposal of sediment during the mechanical dredging operations.

B. Decontamination water, precipitation, and the free water pumped out from the barge will gravity drain to the sumps in the dewatering pads. The sumps will be periodically pumped out directly to the water treatment system. Contractor shall provide a suitable pump for this operation.

C. Suspended solids and adsorbed contaminants in the water will be removed by the water treatment system. A conceptual water treatment system design is shown in the Drawings. Contractor shall provide a water treatment system which enables effluent to meet the discharge permit requirements of the WPDES permit. Contractor shall be responsible for installing, operating and maintaining the components of a water treatment system. Contractor shall be responsible for the materials, labor and equipment necessary for water treatment system setup, operation, decontamination, and teardown.

D. The treatment system controls and monitoring devices, at a minimum, will include the following:

1. Flow meters to indicate influent flow to the treatment system, key unit processes, final effluent.
2. Turbidity meters to monitor water quality of effluent from the GAC filters using a direct measurement instrument.
3. Variable speed pumps or flow control valves to regulate the flow rate through the treatment system.
4. Pressure gauges to monitor head loss across the GAC, bag filters and sand filters.
5. Flow meter measuring and recording the rate and total volume of effluent discharged.
6. Sampling ports to enable collection of samples of system influent and effluent.

E. Consideration will be given to providing additional influent equalization capacity, which would enable shutdown of the treatment system for significant periods to remedy operational issues.

F. Contractor will test the treated effluent water for turbidity using a direct measurement instrument and will sample the water for constituents listed in the WPDES permit.

G. Water will be initially treated in batch mode and Contractor shall obtain and submit samples for analysis. Contractor shall arrange with laboratory for preliminary sample results to be available within two working days of sample collection. Once analytical results indicate the water in the full holding tank meets the discharge criteria, the water will be discharged back into the Sheboygan River.

H. After the initial testing indicates the treatment system is capable of treating the water satisfactorily, the water will not be held and discharged in a batch manner. Treated water will be collected and sampled in accordance with the WPDES permit requirements by the Contractor.

I. Contractor shall subcontract a State of Wisconsin certified analytical laboratory to conduct testing of the water treatment system discharge in accordance with the WPDES permit.

J. A portion of the effluent from the GAC vessels may be stored as a non-potable water source for treatment plant use and backwash cycles. Potable water will be used as a backup water supply.

K. Estimated flow rates for each source of wastewater are provided in the Basis of Design Report (BOD). It is the Contractor’s responsibility to determine what flow rates will be used to meet production schedule requirements. Water treatment system discharge shall be immediately suspended upon receipt of a result violating the WPDES permit and corrective actions shall be provided to the Engineer.

L. Dredging Contractor shall perform water treatment operations as necessary to meet the Project Schedule.

3.12 RESIDUALS MANAGEMENT

A. A 12-inch layer of sand cover shall be placed over the designated dredged areas as shown on the drawings and as described in Section 02 30 20, Residuals Management to manage the settling sediment residuals released during the dredging operations.

3.13 AIR MONITORING

A. Air monitoring activities will be conducted by Contractor at the Campmarina and WINSA sites.

B. Air monitoring for odor and particulate matter will be performed during sediment stabilization because of the possibility of dust being released during sediment handling and solidification.

C. Real-time monitors that measure particulate matter finer than 10 micrometers in diameter and smaller (PM10) will be used for monitoring locations on the Campmarina and WINSA sites in the north, south, east, and west directions from the sediment handling and solidification operations.

D. Every morning, the data from the previous day will be used to determine if the PM10 primary National Ambient Air Quality Standard of 150 micrograms per cubic meter over a 24-hour period is being exceeded. If the PM10 standard is being exceeded, and sediment remedial activities are suspected as the source of the PM10 emissions, USEPA and Contractor shall evaluate operations and Contractor shall modify them to reduce fugitive dust emissions.

E. Contractor will have engineering controls on site and ready to implement if odor or dust emissions cannot be eliminated through other methods.

3.14 COMMUNICATION

A. Dredging Contractor shall provide a system of communication between the dredge crew and the crew at the Staging Area.

B. Radio telephone equipment shall be capable of transmitting and receiving on VHF Channels.

C. Contractor shall provide the Engineer with two rechargeable handheld marine VHF radios capable of communicating with the Contractor during each work window.

3.15 DAY MARKERS AND VESSEL LIGHTS

A. Provide proper lights at night between sunset and sunrise and day markers between sunrise and sunset on any floating pipeline connected with Work; upon all ranges and other markers, when necessary; and upon all buoys or structures of such size and in such locations that would endanger or obstruct navigation.

1. When Work at night is in progress, maintain from sunset to sunrise, such lights on or about Project Site as may be necessary for proper observation and control of dredging operations.

B. Equipment that is floating or supported on trestles shall display appropriate lights at night and in periods of restricted visibility in accordance with USCG regulations and 33 CFR 88.1.5.

3.16 SILT CURTAINS

A. Silt curtains will be used as described in Section 02 40 00, Sediment Resuspension Control.

3.17 AIR BUBBLE CURTAIN

A. Air bubble curtains may be used as described in Section 02 40 00, Sediment Resuspension Control.

3.18 CLEANUP

A. After the dredging activities have been completed, and wastewater has been discharged, decontamination activities will be performed in accordance with Section 01 72 00, Decontamination of Personnel and Equipment.

3.19 DEMOBILIZATION

A. Demobilization shall include the removal of Contractor's materials and equipment either for disposal or reuse.

B. Failure to promptly remove plant, equipment, and materials upon completion of the dredging will be considered a delay in the completion of the demobilization work. In such a case, USEPA may exercise its right to remove plant, equipment, and materials at Contractor's expense.

END OF SECTION

SECTION 40 80 01
PROCESS PIPING LEAKAGE TESTING

PART 1 GENERAL

1.01 SUBMITTALS

A. Informational Submittals:

1. Testing Plan: Submit prior to testing and include at least the information that follows.
   a. Testing dates.
   b. Piping systems and section(s) to be tested.
   c. Test type.
   d. Method of isolation.
   e. Method of filling and draining pipe to be tested using harbor water.
   f. Calculation of maximum allowable leakage for piping section(s) to be tested.
2. Certifications of Calibration: Testing equipment.
3. Certified Test Report.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 PREPARATION

A. Notify Engineer in writing 5 days in advance of testing. Perform testing in presence of Engineer.

B. Pressure Piping:

1. Install temporary thrust blocking or other restraint as necessary to protect adjacent piping or equipment and make taps in piping prior to testing.
2. Wait 5 days minimum after concrete thrust blocking is installed to perform pressure tests. If high-early strength cement is used for thrust blocking, wait may be reduced to 2 days.
3. Prior to test, remove or suitably isolate appurtenant instruments or devices that could be damaged by pressure testing.
4. New Piping Connected to Existing Piping:
   a. Isolate new piping with grooved-end pipe caps, spectacle blinds, blind flanges, or as acceptable to Engineer.

5. Test Pressure: 1.5 times the system design pressure at the lowest elevation in the section under test

C. Test section may be filled with water and allowed to stand under low pressure prior to testing.

D. Gravity Piping:

1. Perform testing after service connections, manholes, and backfilling have been completed between stations to be tested.
2. Determine groundwater level at time of testing by exploratory holes or other method acceptable to Engineer.
3. Pipe 42 Inches Diameter and Larger: Joint testing device may be used to isolate and test individual joints.

3.02 HYDROSTATIC TEST FOR PRESSURE PIPING

A. Fluid: Clean water of such quality to prevent corrosion of materials in piping system.

B. Exposed Piping:

1. Perform testing on installed piping prior to application of insulation.
2. Maximum Filling Velocity: 0.25 foot per second, applied over full area of pipe.
3. Vent piping during filling. Open vents at high points of piping system or loosen flanges, using at least four bolts, or use equipment vents to purge air pockets.
4. Maintain hydrostatic test pressure continuously for 30 minutes, minimum, and for such additional time as necessary to conduct examinations for leakage.
5. Examine joints and connections for leakage.
6. Correct visible leakage and retest as specified.

C. Buried Piping:

1. Test after backfilling has been completed.
2. Expel air from piping system during filling.
3. Apply and maintain specified test pressure with hydraulic force pump. Valve off piping system when test pressure is reached.
4. Maintain hydrostatic test pressure continuously for 2 hours minimum, reopening isolation valve only as necessary to restore test pressure.
5. Determine actual leakage by measuring quantity of water necessary to maintain specified test pressure for duration of test.

6. Maximum Allowable Leakage:

$$L = \frac{SD(P)^{1/2}}{133{,}200}$$

where:

L = Allowable leakage, in gallons per hour.
S = Length of pipe tested, in feet.
D = Nominal diameter of pipe, in inches.
P = Test pressure during leakage test, in pounds per square inch.

7. Correct leakage greater than allowable, and retest as specified.

3.03 HYDROSTATIC TEST FOR GRAVITY PIPING

A. Testing Equipment Accuracy: Plus or minus 1/2-gallon water leakage under specified conditions.

B. Maximum Allowable Leakage: 0.16 gallons per hour per inch diameter per 100 feet. Include service connection footage in test section, subjected to minimum head specified.

C. Gravity Sanitary and Roof Drain Piping: Test with 15 feet of water to include highest horizontal vent in filled piping. Where vertical drain and vent systems exceed 15 feet in height, test systems in 15-foot vertical sections as piping is installed.

D. Defective Piping Sections: Replace or test and seal individual joints, and retest as specified.

3.04 FIELD QUALITY CONTROL

A. Test Report Documentation:

1. Test date.
2. Description and identification of piping tested.
3. Test fluid.
4. Test pressure.
5. Remarks, including:
   a. Leaks (type, location).
   b. Repair/replacement performed to remedy excessive leakage.
6. Signed by Contractor and Engineer to represent that test has been satisfactorily completed.

END OF SECTION